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MODEL AIRPLANE NEWS

THE WORLD'S PREMIER R/C MODELING MAGAZINE Canada $3.75

READER REPORTS

FREE!! O/T FLOAT PLANS!

59th ANNIVERSARY

Anatomy of a FLOATPLANE

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High-Performance Float Mods

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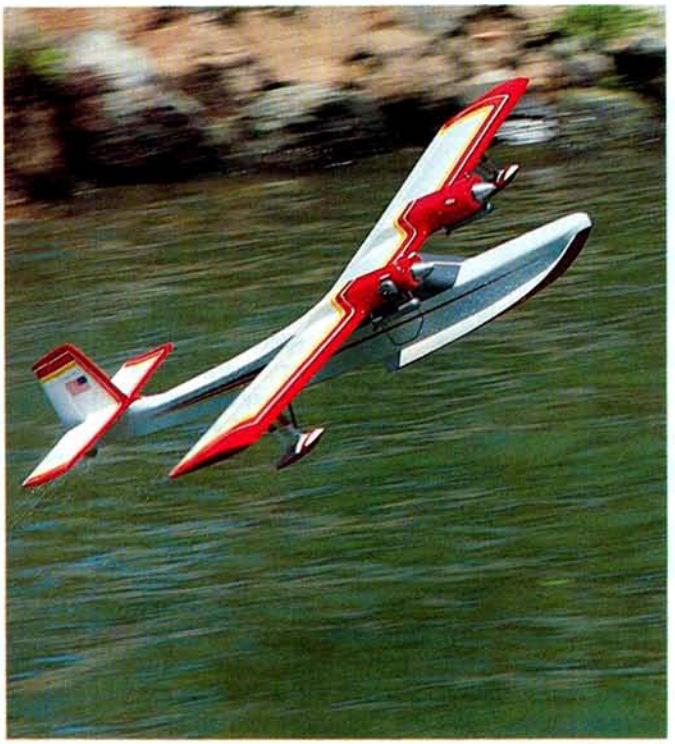
OCTOBER 1988 VOLUME 116, NUMBER 10

MODEL AIRPLANE NEWS



ON THE COVER: While Randy Randolph's sporty Twiliter II (*MAN* Plan #12871) floats serenely on the local pond, a more aggressively powered Sig Morrisey Bravo gets on the step at the Clearlake '88 Float Fly. Looking very scale-like is the Hobby Shack Decathlon 40 riding on its newly installed EZ Floats, which are tested in this issue. All part of our annual Floatplane Special. Photos by Wes Moore, John Sullivan and Steve Pond.

FEATURES

COLUMNS

COLUMNS

DEPARTMENTS

Model Airplane News (ISSN 0026-7295) is published monthly by **Air Age, Inc.**, 251 Danbury Rd., Wilton, CT 06897. Second class postage paid at Wilton, Connecticut, and at additional mailing offices. Subscription rates are $25 for 1 year (foreign $33), $47 for 2 years (foreign $63), $65 for three years (foreign $89). **Postmaster:** Send Form 3579 to **Model Airplane News**, P.O. Box 428, Mount Morris, IL 61054.

Editorial

by RICH URAVITCH

BY THE TIME YOU READ THIS, I'll have been at this job for just about one year. It's been an exciting, challenging period in which we've set the wheels in motion for things you'll be seeing in the future. Other items you've already noticed and hopefully enjoyed. One of these elements is our Reader Reports section in which all readers are invited to participate in our Field and Bench product reviews. The participation is growing and we're pleased. We've started or reinitiated three new columns; the newest addresses items of importance to newcomers to the hobby and also serves as a refresher for some of the things we may have forgotten along the way. Joe Wagner is doing it for us, which couldn't be better because he's probably done it all.

The year has passed rapidly and a year *is* a long time, but when you figure that *MAN* has been communicating with modelers for over 59 years, you can see that I've got my work cut out for me. I just noticed an article in the September issue of *Model Aviation* on Richard Seely, an aviation literature collector from Olympia, WA. You can imagine the great feeling of pride all of us here at *MAN* felt when we saw the photograph of Mr. Seely smiling and holding his copy of *Model Airplane News*, Vol. 1, No. 1, dated July 1929. We plan to be around for another 59 years, probably not me personally, but someone will be "in the cockpit" to bring you the best in the business.

This issue is our second annual float-plane edition and we really enjoyed putting it together for you. John Sullivan had a lot to do with it and we thank him for his ideas and suggestions.

In talking with some of the local club members about float flying, it seemed that they thought it was too difficult. They didn't want to "build a special airplane" or weren't sure where they could fly it. I even got the impression that some of them might actually be afraid to try it. Believe me, it's as easy, if not easier, than land-plane flying. The articles included in this issue should put to rest the requirement for a "special airplane." We tell you about two different sets of floats; one built-up, the other prefinished ARF-style, and both are adaptable to nearly any airplane. We break the amphibians down similarly, and even one of these can be flown off land. Finally, for those of you who have floats and would like to improve their performance, we tell you how to do it. We've even included full-size plans for Randy Randolph's old-timer-type 3-point floats. You may just about have run out of excuses not to try it. Consider this: How many times did you organize a "new field search party" when your flying field may have been in jeopardy? How many usable bodies of water did you overlook in your search? They're worth looking into—not necessarily as a primary site, but as a great alternative.

Upcoming adventures: Oshkosh '88 and the 6th Annual Greater Southwest Fan Fly. Stick with us. ■

MODEL AIRPLANE NEWS
THE WORLD'S PREMIER R/C MODELING MAGAZINE

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Airwaves

Cat Lover

John Sullivan's column, "Floating Around," (July '88) was great reading. I've been working on a long-term project, building a Sid Morgan 9-foot P-boat. My goal is to get it as close to scale as I can. This includes full retracts with scale movement/times as realistic as can be expected in a flying model. Apparently, Gary Emerson encountered some of the same shortcomings in the Morgan plans as I did. My plane is built, covered, glassed and ready for systems installations. The completed PBY-5A will be a replica, down to the S/N of the plane I drove around in the North Pacific some 43 years ago.

Since I live in a rural valley of the Northern Rockies, it's been impossible to compare notes with other modelers.

So here is some information about the project that I've compiled on my own:

- The finished model will weigh approximately 24-26 pounds and is powered by Enya 1.20s turning 12-inch props.
- The wing is planked back to the rear spar. Color-tex covering is used from the rear spar to the trailing edge.
- The nose gear is a modified, retractable, giant-scale glider landing wheel.
- The upper surface of the wing center section is removable for access to the throttle servos and the wing-tip float servo actuator.
- The entire cockpit canopy, from the bow turret to the base of the wing pylon, is removable for access to the cockpit and electronics.
- The radio is a Futaba 8-channel PCM with ¼-scale servos on flight controls and S-130s on the throttles.

As expected, the main landing gear retract hardware is proving to be a problem. No answers to date.

I intend to modify the engines to spark ignition before flight. Dual engine control will be done by a CK-3 from C&K Ventures, Laramie, WY.

I'm interested in Gary Emerson's trouble with the jackscrew float actuator. The use of an air-system retract is something I would like more specifics on. I guess my main concern is actuation time. Full-scale float operation is very slow time.

I didn't really like your "up-scale maneuvers" comments. The "yoke boat" doesn't take kindly to aerobatics. In full scale, such foolishness would be deadly. Talk of "an impressive split S" and a "hair-raising victory roll" doesn't belong in the world of this model. Please don't encourage such ridiculous displays of hotdogging.

EARL M. POLLARD
CDR USNR-R
NW 400 Jorgy Way
Hamilton, MT 59840

Commander, your PBY-5A sounds as if it will be one magnificent model. Since John Sullivan's column appeared, it's amazing how many letters we've received from modelers who either have a PBY under construction or plan to start one. We'd sure like to have photos of all of them—maybe we could do a special piece and include some photos of full-scale examples! You Cat lovers could probably even start a "Cat Club." For any of you who can provide information for the Commander, we've printed his entire address.

RAU

Construction Plans Needed

This is a request for assistance in a search for a set of construction plans for a Stinson Reliant SR9 or SR10. I built a craft of this design from the plans of Mr. R. G. Barron of Grand Blanc, MI, but have had no reply to a recent request for another set of plans. Do you know his present address? My initial contact with him was through his ad in your magazine.

I have had a request to build a model of the SR-10G, as shown in an article by Kenneth Wilson, in the July '76 issue of *MAN*. This would be a full-scale model, with full-house radio control. The wing-

(Continued on page 10)

Airwaves

(Continued from page 8)

span would be about 95 to 100 inches. The plane would be used in a film depicting the history of aviation in the "Golden Years"—the '30s.

Incidentally, may I offer a much belated accolade to Mr. Wilson for the article mentioned above? His attention to detail will be a tremendous help in making the proposed model.

LINCOLN W. FARIES
Richboro, PA

Mr. Faries, thanks for the kind words. We, too, lost track of Dick Barron's plans service and have discovered that Dick, unfortunately, passed away some time ago. His great plans, however, will continue to be sold by his wife, Betty. She may be reached at Barron's Scale Classics, 11506 Ohio Ave., Youngtown, AZ 85363.

RAU

Gone to the Dog

Here's a clipping from *MAN*, July '78, about the PZL 104 Wilga made in Poland. I would like to contact the builder of this model and find the address of the US representative. (It might even be in Canada.) Can you help me?

Regrettably, this is all the article I have left; my dog ate the rest.

SEAN TELLEZ
Lomita, CA

Sean, the article from the July '78 MAN *covers the PZL 104 Wilga, built by Philip Moore of Great Britain. The article was called "Designing Scale Structures." Philip flew the well-detailed model to third place in the 1977 Tournament of Champions. The last address we have for Philip is over 10 years old. Perhaps someone can advise us of his current whereabouts? Incidentally, we hope the dog is OK; his choice of material shows excellent taste! We're sending along copies of the complete article.*

RAU

Cover Art

I was wondering if anyone on your staff knows the current address of Joe Kotula, the cover artist who graced *Model Airplane News* covers in the 1950s and early '60s. I'd like to write to him and would appreciate any information you could give me regarding his current address.

ALAN D. HART
Syracuse, NY

Alan, you might just be in luck. Mr. Kotula has recently joined the advisory board of a new organization called Aero Art. You can probably reach him at their address: 15 West 44th St., New York, NY 10036.

RAU

Desk-Top Deco

Do you know of any firm that makes desk-top-size, non-flyable models of World War II and post-World War II aircraft, such as the C-124, C-97, C-5A, P-47 and P-51?

I'd appreciate a source with reasonable prices for such a model—"reasonable" being $50 or less. Years ago, manufacturers used to *give* these away, but that's no more.

Good magazine, keep up the good work.

COL. HARRY G. HOWTON
Ft. Walton Beach, FL

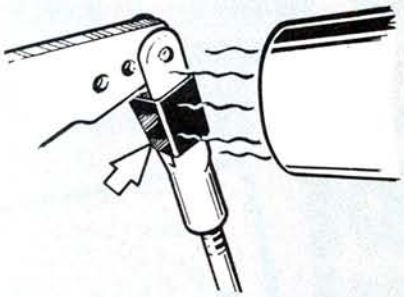
Colonel, I'm familiar with the desk-type "company" models that used to be given away after you checked out in the airplane or were associated with it in some manner. I've got a shelf full of them myself, and while they aren't as accurate or as detailed as most of the currently available plastic kits, they are *highly desirable and much sought after. Many of these models are manufactured at Precise Models in Elyria, OH. They produce many different types under contract to the major airframe manufacturers, and they might be able to advise you of a retail source. One company that does sell them is Travel In Time Toys, Inc., 6 Carillon Rd., Brewster, NY 10509. Bob Post is the head man there and he can be reached at (914) 279-9060.*

RAU

We welcome your comments, opinions, and suggestions. Letters should be addressed to "Airwaves," **Model Airplane News**, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and length.

Hints & Kinks

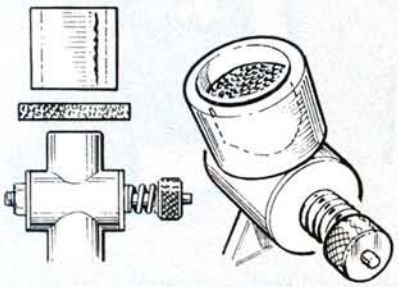
by JIM NEWMAN



CLEVIS SECURITY

Some fliers have had clevises open under heavy flight loads, and a piece of fuel line has also been known to slip off due to oil on the clevis. Here's a solution: After attaching the clevis, slip a ½-inch length of heat-shrink tube over it, then shrink tight with a heat gun. This contributor says it will never open accidentally.

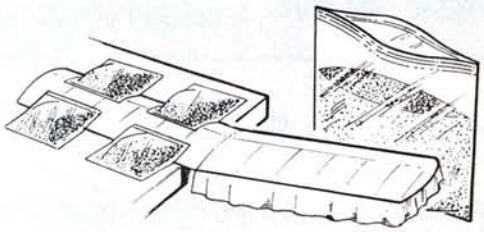
Darryl Carpenter, Goderich, Ontario, Canada



DO-IT-YOURSELF AIR FILTER

This contributor calls this his econo-cleaner. Air filters for small engines are difficult to find, or are so bulky that they're impractical in small models, so purchase a lawnmower ¼-inch-thick foam-filter element and some large-diameter clear vinyl tube (from your local hardware store). Cut the foam ⅛ inch larger than the OD of the venturi, and cut a piece of tube twice the length of the venturi. Assemble both as shown.

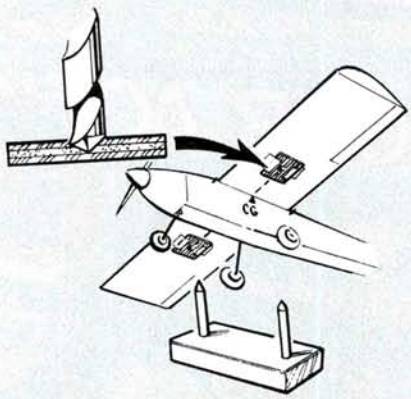
Jerry Meade, Meriden, KS



THIRD-HAND SANDBAGS

Sandbags are so useful when building, covering, painting, or when parking that sailplane, wing down, into wind; just put a couple on the low tip. Sandbags conform to the shape of the structure; they don't cause damage to the plane; and, compared with lead shot, are very inexpensive. Just use the desired size of ZIP-LOC plastic bags, filling each with dry sand.

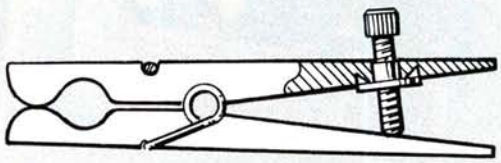
Jim Polvadore, Ft. Worth, TX



BALANCING JIG BEARING

Most modelers are familiar with balancing jigs comprised of two pointed dowels in a block, but the disadvantage of this system is that it invariably leaves dents in the underside of the wing. Two small squares of plywood, each with an indentation made with a drill point, can be taped under each wing on the CG line to provide a socket/bearing for the dowel points. No more dents in the finish.

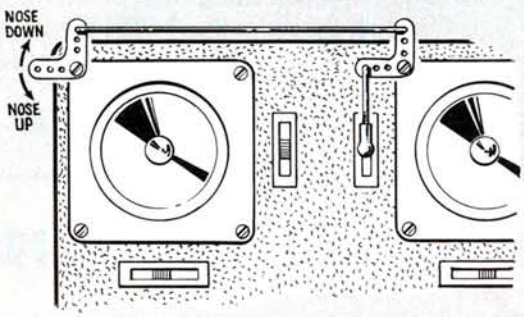
Chris Vogel, League City, TX



EXTRA CLAMP PRESSURE

This modeler makes use of clothespins as clamps, and since he occasionally requires a little extra clamping pressure, he modified the pins as shown—adding a blind nut secured with a little CA and a cap screw. Torquing down on the screw forces the jaws together more firmly.

P. Scott Weidman, Alexandria, VA



REMOTE ELEVATOR TRIM LEVER

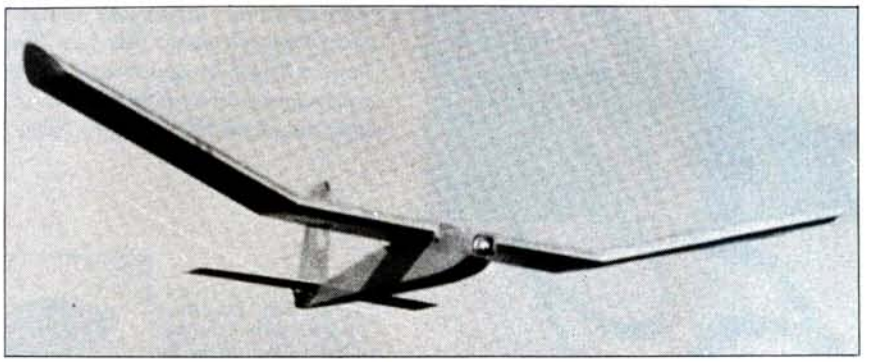
The simple addition of a pair of 90-degree bellcranks and 1/16-inch welding wire moves the elevator trimmer to the left side of the transmitter, where it can be conveniently operated by the left thumb. This is especially useful for retrimming to correct altitude/airspeed on final approach, when it's not possible to release the elevator stick. Great care must be exercised when drilling the trim lever to accept the ball component, which should be glued in place with CA.

Armand Cote, Laconia, NH

Model Airplane News will give a free one-year subscription (or one-year renewal if you already subscribe) for each idea used in "Hints & Kinks." Send rough sketch to Jim Newman, c/o **Model Airplane News**, 251 Danbury Rd., Wilton, CT 06897. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we cannot acknowledge each one, nor can we return unused material.

Basics of Radio Control

by RANDY RANDOLPH



Dihedral is almost free—it costs nothing and isn't very heavy, but a rudder airplane won't turn without it...must be valuable!

THE TERM "DIHEDRAL" comes from solid geometry and defines the angle at which two planes join; the angle between the two planes is measured. In aircraft parlance, it's easier to consider the dihedral angle as one formed between the wing panel and the horizontal. Two degrees of dihedral in a wing means that the tips of each wing are raised until each wing panel forms a two-degree angle with the horizontal. The dihedral angle can be either positive or negative, but "dihedral" usually indicates a positive number and "anhedral" or "cathedral" indicates a negative one.

Dihedral is employed to add stability to an aircraft. Assume an airplane is flying in a straight line, at a fixed rate of speed and constant altitude, and the flight path is upset by a wind gust under the left wing. The left wing will rise and the airplane will slip toward the right, but, because of the dihedral, the slip causes the right wing to be at a higher angle of attack than the left, thereby generating more lift, and this raises the right wing and returns the airplane to level flight. There are other factors involved, but this example is the classic description of dihedral's effect in stabilizing an airplane.

The effect a slip has on an airplane with dihedral is used to cause an R/C airplane to bank without the use of ailerons. Two-channel (rudder and elevator) R/C airplanes rely on the rudder and dihedral to make turns; rudder alone won't give the desired results. The action of the rudder and dihedral to cause a bank, necessary for a turn, can be seen in the following example of a left turn:

When the left-rudder command is given for a left turn, the rudder moves the tail to the right causing the airplane to slip forward toward its right side and bringing the right wing to a higher angle of attack, thus generating more lift for that wing. Unlike the momentary gust of wind in the other example, the left rudder is held, keeping the airplane slipping and the right wing rising, until the desired bank angle is achieved. If the rudder is held for a longer period, the airplane will eventually roll. This rudder-dihedral effect holds true even though the airplane is inverted, because left rudder will always cause a left turn. As a general rule, five degrees of dihedral is considered adequate for rudder-elevator planes.

The effect of dihedral can be achieved in different ways. An airplane with the wing above the thrust line seems to have two degrees more dihedral than it actually has. Conversely, an airplane with the wing below the thrust line can lose two degrees of effective dihedral. This accounts for the large increase in measured dihedral in low-wing airplanes that must rely on rudder/dihedral effect for control.

Sweep-back in a wing also causes an effect similar to dihedral, but for a slightly different reason. In a slip, the advancing swept-back wing presents its leading edge squarely to the relative wind, achieving higher lift than the receding wing. A wing with a tapered leading edge will exhibit this characteristic to a lesser degree, and there's even a slight effect in a double-tapered wing.

In theory, elliptical dihedral is the most efficient, because there are no angular breaks in the lifting surfaces. At one time, an R/C sailplane with beautiful elliptical dihedral pre-built into the wings was marketed, but, by and large, the difficult construction necessary has limited the use of this type of dihedral. Next in line are wings with polyhedral and tip dihedral. These attempt to improve the efficiency of the lifting surface by approaching the elliptical. Most high-efficiency sailplanes employ polyhedral wings, but most R/C aircraft use simple dihedral with the angle change at the fuselage, where it can be adequately braced.

It's interesting to note that flat, very low-aspect-ratio wings exhibit a stabilizing effect similar to several degrees of dihedral. Shades of the flying saucer!

Talking about wings, Jack Norton, of Cincinnati, OH, has a dandy way of preshaping leading and trailing edges. He glues two pieces of triangle stock (of an appropriate size) side by side on a piece of ¼-inch stock. He then covers them with sandpaper so that it sags slightly between them and, while holding the sandpaper, sands the leading-edge stock to shape. Pre-shaped trailing edges, or ailerons, are made by using two pieces of trailing-edge stock in the same manner, but this time the sandpaper is glued firmly, before sanding, into the V-shaped notch between them.

Now, aren't you glad you didn't stop reading in the dry part? ■

FIFTY YEARS

by LOUIS DeFRANCESCO

Since its first issue in 1929, ***Model Airplane News*** *has chronicled full-scale aviation as well as modeling. For decades, the youth of America was able to build stick-and-tissue models of the latest winged wonders that were being introduced by airplane manufacturers.* ***Model Airplane News*** *was introduced at a time when people like Charles Lindbergh and Amelia Earhart were everyone's heroes and we were exploring the frontiers of airspace—hence the company's name: "Air Age." Times have changed, and sticks and tissue have been eclipsed by space-age composites, cyanoacrylates and fiberglass. The catchword for our hobby is "radio control," but one thing is still certain: Our magazine is still the modeler's "bible."*

59 Years of Service to Modelers!

Howard Hughes made his famous transglobal flight in this unique twin-engine plane. Flight was made in a record-breaking 96 hours.

1929

This early cover of Model Airplane News *exemplifies what the magazine was all about. Note the two over-zealous kids with their stick-and-tissue model airplane. It was an era when aviation was making headlines daily, and we were conquering the frontiers of air space.* Model Airplane News *captivated the youth of America for decades to come.*

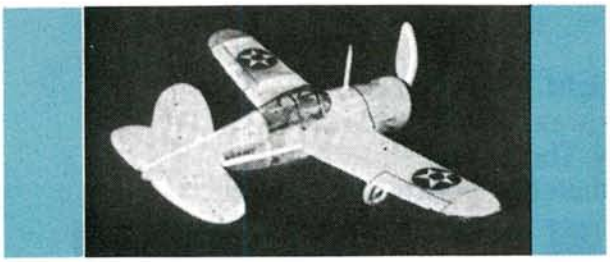
1931

As well as informative construction articles, modeling news and events, Model Airplane News *also featured exciting adventure and detective stories. This particular issue even featured plans on building a Canard!* Model Airplane News *was educating a whole new generation of aspiring pilots. Also included were beautiful scale three-views of famous aircraft, including many famous World War I fighters. CO_2 and gas power were coming of age.*

1943

Patriotism was evident on this January 1943 cover, which featured a rendering of a Japanese Zero fighter being shot down. As World War II escalated, Model Airplane News *always featured stories on our latest fighters. Modeling was becoming more sophisticated and many new engine and kit manufacturers were arriving on the scene. Companies like Testors Paint, X-Acto and Super Cyclone Engines were advertising their new, innovative products. Radio control was in its incubating stages.*

AGO



Plans to build a model of the Navy's newest fighter, the Brewster XF2A-1, were included in this early issue of MAN.

The record-breaking Baby Cyclone engine was now available to modelers.

THE OCTOBER 1938 ISSUE of *Model Airplane News* heralded the famous globe-circling flight of Howard Hughes, which was accomplished in 96 hours. This was an incredible feat at the time, and he did it with his custom-built, twin-engine "World's Fair" airplane. The words spoken by Hughes to the crowd before takeoff can best explain the strength of his feelings about this epic flight: "I hope," Hughes said, "that in some measure, this flight will bring about a world fellowship among aviators. No matter whether you are Hindu or American, as I am; if you fly, we speak the same language." That faith was something that Hughes and his four crew members had to uphold; they had no time to think about glamour or thrills.

As usual, tremendous strides in full-scale and model aviation were being made. Press releases were issued on the Navy's newest fighter—the Brewster XF2A-1. This single-seat fighter was powered by a Wright 9-cylinder Cyclone radial engine rated at a whopping 1,000 horsepower, and it featured a controllable three-bladed Hamilton prop and retractable landing gear. Of course, plans of this airplane were printed, so that you could build your own model (a tradition that is still an inherent part of *Model Airplane News* 50 years later).

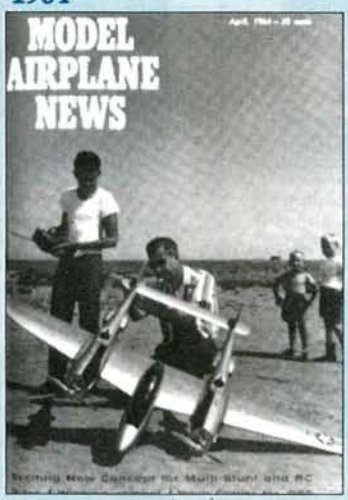
As usual, the issue was replete with advertising from the various engine and kit manufacturers. One ad by the Cyclone Company boasted a new World Record flight! A Baby Cyclone-powered model flown by Mel Anderson of Long Beach, CA, had successfully flown for two hours and one minute. This was the longest model-airplane endurance

(Continued on page 74)

1951

By the early fifties, **Model Airplane News** *was ushering in the Jet Age with dramatic paintings of new jet aircraft by famed aviation artist, Joe Katula. This cover featured the new Lockheed F-90. Early reed-type radios were being developed and control line was very popular. Dope was now available in many colors, and companies like K&B and Scientific Models were providing modelers with products. This issue featured a neat article and drawings of the famed Northrop flying wing, precursor to the soon-to-be-flown B-2 stealth bomber.*

1964



During the mid-sixties, modeling was rapidly evolving. Reed-type radios were being displaced by the new proportional radio systems, larger scale aircraft were becoming more popular, and names like Duke Fox and Carl Goldberg were becoming legend. This cover featured an R/C scale P-38 guided by an F&M radio system (now defunct) and powered by twin Fox .40 engines. Mail-order advertising was becoming more popular and companies like America's Hobby Center, still thriving today, were advertising the latest in R/C!

1974

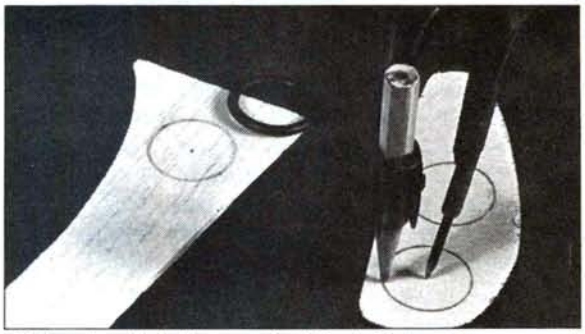
Radio control was the name of the game by the mid-seventies, and many other forms of R/C aircraft, including gliders, were gaining in popularity. This cover featured Hobie Alter (of Hobie Cat fame) with his Hobie Hawk sailplane. The first R/C helicopters were being flown, and fiberglass and cyanoacrylates were replacing balsa and epoxy. Many of the large R/C companies of today were just getting started during this period. The seventies also saw the growth and development of R/C cars and boats.

How To:

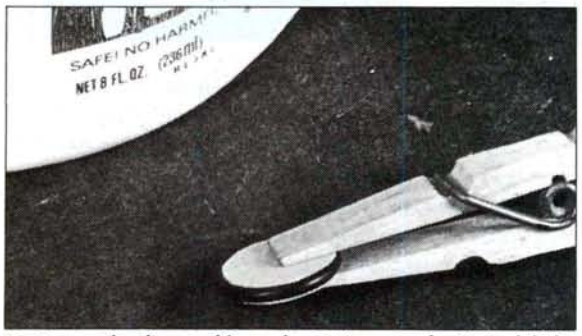
by RANDY RANDOLPH

MAKE A LIGHT TAIL WHEEL

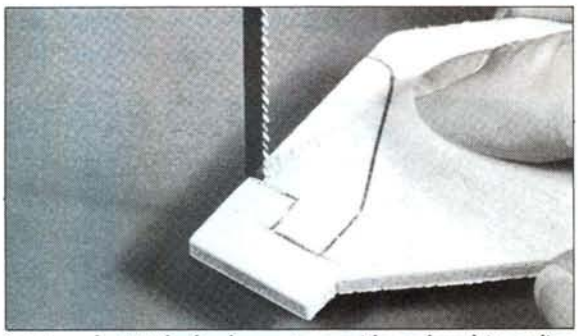
The tail of an airplane is the very last place to add weight. If the correct balance is to be maintained, additional weight in this area must be offset by a much greater amount in front of the center of gravity. The photos show how to make and install a tail wheel that adds little more than the weight of a tailskid!



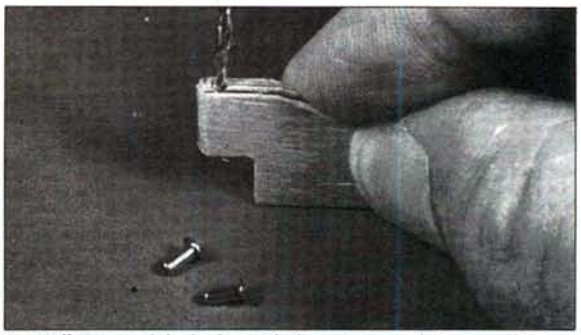
1. The wheel is built around a ½-inch O-ring. On a scrap of 3/32-inch balsa, use a compass to draw a circle slightly larger than the inside diameter of the O-ring. On a piece of 1/64-inch plywood, draw two more circles, 1/16 inch larger in diameter.



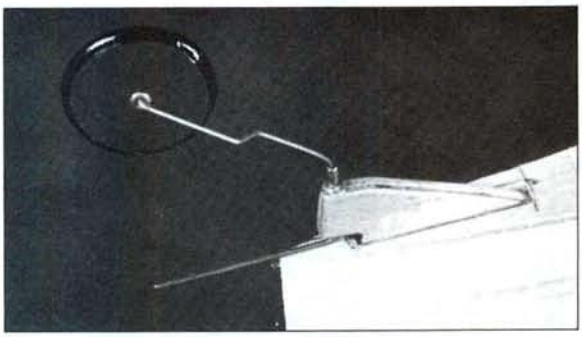
2. Cut out the discs and force the O-ring over the 3/32-inch balsa core. With the plywood discs on the outside, glue the "sandwich" together and clamp. When the glue has set, carefully center the discs, one on the other, so they can be drilled with a 1/16-inch drill in the center.



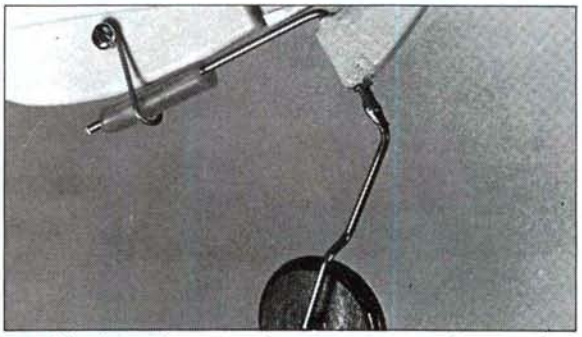
3. Use a plastic tail-wheel mount as a guide, and mark its outline on a piece of 1/8-inch aircraft plywood. Note the notch at the back to receive the steering tiller. Allow an extra 1/16-inch depth on this notch so the mount can be epoxied into the fuselage.



4. Drill a 1/16-inch hole through the mount as shown, and epoxy 1/16-inch brass eyelets on both sides of the hole. Epoxy one brass eyelet through the center of the tail wheel. (These eyelets are available at most hobby shops.)



5. Make a right-angle bend in a piece of .047 music wire, push it through the bearings in the mount, add a 1/16-inch brass eyelet and bend the axle to shape. Notch the ply mount base in the fuselage to match the mount and epoxy it in place.



6. Solder the eyelet against the mount to act as a bearing, then mount and paint the tail wheel. The tiller is captured by a U-shaped wire fitting bolted to the rudder. A piece of fuel tubing cushions the shock between tiller and rudder. The wheel shows little wear after one year of flying.

Pattern Matters

by MIKE LEE

THIS MONTH, I'll begin with a review of an aircraft that has been around for a while, but is still worthy of consideration by pilots entering pattern. Newcomers to pattern, whether they have advanced piloting skills or not, should begin their training with an aircraft that's very "honest," yet slow enough to allow the beginner time to think.

The Lanier R/C* Caprice 60 is an ARF-type aircraft, with covered wings, ready-made fuselage and ready-made tail features. It's made mostly of ABS-type plastic, but the wings are foam, and the fuselage frame is wooden. Despite the age of the design (a couple of decades), the ship is quickly flight-ready, it's straight-built, and it has the aerobatic stability to perform a pattern while traveling at sub-sonic speeds. (This sub-sonic speed is important to the learning process.)

Lanier R/C has been around since I started in R/C, and this was when the best digital proportional radios were still built from kits. The basic design of the Caprice originated with the Citron, and later, the Jester. (I think the Citron was a National-winning design.) The construction of Lanier ships has always been basically ABS plastic on wooden frameworks and foam wings, and the company is now in the hands of Bubba Spivey, a lively sort of guy, who is bringing Lanier back to the front lines.

Building the Caprice is pretty easy, beginning with the fuselage. The basic unit is already made, so the builder simply attaches tail features, installs an engine and radio, and fits the wings. There is more cutting than gluing, and most of the gluing is for the installation of the radio trays. The large turtle deck is attached with the supplied "Air-O-Cement," which is a liquid solvent that welds the assemblies together. Install a canopy, and then move on.

The wing is next, and this is the basic foam wing already covered with Air-O-Skin (a tough, vinyl-type plastic). Two large, plywood, wing joiners are used to mate the wing halves along the built-in spar. Also embedded in the foam are the landing-gear blocks. After wing joining, aileron hardware and landing gear are fitted, and ailerons hung. All done!

Pilots fly their maneuvers for the judges at a meet in Chino, CA. The contest was designed to give new pattern pilots an idea of what pattern is all about. It pays to listen to the judges about what style of flying they like to see. The judges provided valuable feedback to the pilots after their flights.

By this time, you have a bird that's almost complete, but the whole thing is white. Being plastic, the surface will accept most paints, but I recommend sanding the surfaces to be painted with 400 grit to ensure adequate paint adhesion.

I equipped the Caprice with an HB .60 PDP and pipe. This engine utilizes the famous Perry Directional Porting intake-charging system. It isn't quite like Schneurle scavenging, which uses separate and distinct auxiliary ports to direct the flow of new gases toward the top of the combustion chamber. Perry porting directs the flow of gas to the top of the head by extending the main port so that it almost wraps around the piston, providing nearly a curtain of gas that's directed towards the top of the combustion chamber. It actually uses less fuel this way and is very efficient. The result is proven in our engine; it's a superbly strong motor with more guts than we need—in fact, an excellent powerplant for FAI.

In the air, our Caprice, with the HB .60, was a very pleasant bird. The HB .60 was overkill, as the Caprice family line was originally made to fly on the K&B 60, but the airframe proved to be very satisfactory for flying pattern. Roll is nice, being rapid enough for the new pattern pilot, but not fast enough for most Experts and Masters. Pitch is amazingly smooth, so the plane will be enjoyed by Novice- and Sportsman-Class pilots. The rudder response is more than adequate, provid-

(Continued on page 23)

(Continued from page 20)

Norm Page is back. His original design, the Mach One, appeared some 15 years ago and was the first of the "rocket ship" pattern birds. Norm has now upgraded his design with this Mach One X for FAI. Note the winglets and triple vertical stabs—he says it assists in knife-edge flight.

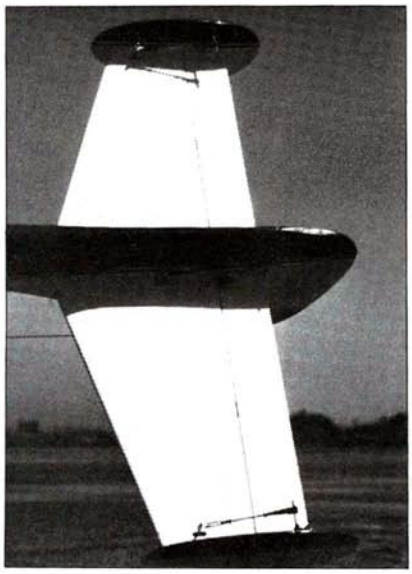
ing easy stall turning and even sustained knife-edge ability. Landing is very docile, the Caprice remaining stable to touchdown, but you'll have to work a little on the flare to get it to settle in for that 10-pointer.

Overall, the Caprice is fine for everyday flying, and it has the right qualities for the Novice and Sportsman to make those entry-level efforts into pattern flying. On top of that, it's assembled quickly and cleanly. If you want a quick pattern bird, or if you want a great sport plane with pattern performance, the Lanier Caprice is a good bet.

Contest Tips

By the time you read this, the 1988 Nats will be over, but I'll give you some tips to help you impress the judges *next* time. Yes, I should have done this before the big one, but what the hey. Anyhow, what I'm talking about is being able to give the judges what they want in terms of flying the style *they* want to see. Sometimes it's hit and miss, but at other times, it's a matter of adapting to a slightly different style.

I was once standing at a contest flight line, and I overheard the judges saying that the Masters Class fliers in FAI can't get it right when it comes to the stall turns. One of them went on to say that, in accordance with the book, he deducts a full point if he sees the tail wiggle *after* the stall turn. "Really?" I thought; "hmmm, I don't recall *that* one in the book." Seems to me that the book stipulates that a wiggle indicates a *true* stall turn. Well, no matter, I'd heard what he wanted, so that's what I gave him, and I scored well!

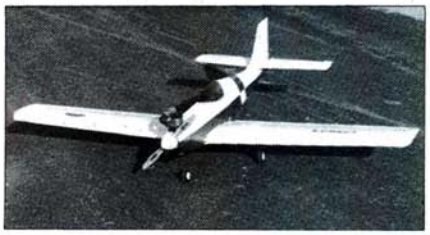


Tail end of Norm Page's Mach One X shows the triple vertical-stab arrangement and working triple rudders. Looks like Norm needs a tail skid!

After the contest, the judge was asked about this point in the stall turn. Sure enough, in the FAI rule book he found that the stall turn is *downgraded* (consequently, the Figure M as well) for tail wiggle. However, the AMA book says it indicates a *true* stalled maneuver!

That wasn't so bad, although I was surprised, and so were a few others. The next surprise came when another judge wanted to discount the Figure M if the plane didn't stall turn in opposite directions in relation to the ground. Hmmm, I thought that one didn't matter anymore, either. But hey, that's what he wanted, and that's what he got from me. Score again!

The moral of my story is that in the first case, the judge was right and in accordance with the book, but the pilots I talked to weren't. (Guess we took that one for granted.) In the second case, the judge was off, but, to score well with him, you had to do as he said. Each judge is human and is prone to error or misjudgment, and the same is true of pilots. To score well, it helps to know what the judges are looking for. When there's a difference between the style you fly and the style the judge wants to see, you'd better be able to adapt



Lanier Caprice, equipped with a HB .60 and pipe. This ARF design is over 15 years old and still quite suitable for use in Novice and Sportman pattern. Makes a good sport aircraft as well.

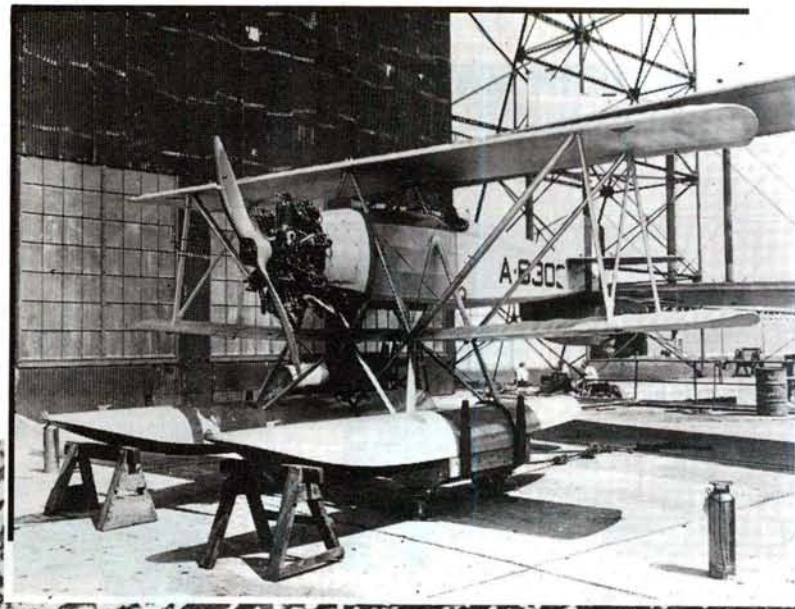
quickly. The technical execution of a maneuver is by the book, but the *style* of execution can also play a large part in determining your score.

I've seen an absolutely correct technical execution being scored low by the judge. The same maneuver performed by another pilot was also technically correct, but scored much higher. The difference was in the *style* of execution. The first pilot did a square loop with half-rolls. His rolls were about 1 to 1.5 seconds long; no deviation and quite smooth. The second pilot performed his rolls in about .75 seconds—crisp and fast. The book says nothing about how fast the rolls in this maneuver should be, but we saw a score difference of two points. The judges of this round seemed to like a fast, crisp style. Here's where you can profit by adapting to the faster style.

Another example of this is distance in the maneuver. I've seen a plane that's just a little winged blob in the distance score more than one that's at a correct distance,

(Continued on page 74)

FLOATING THRU THE YEARS



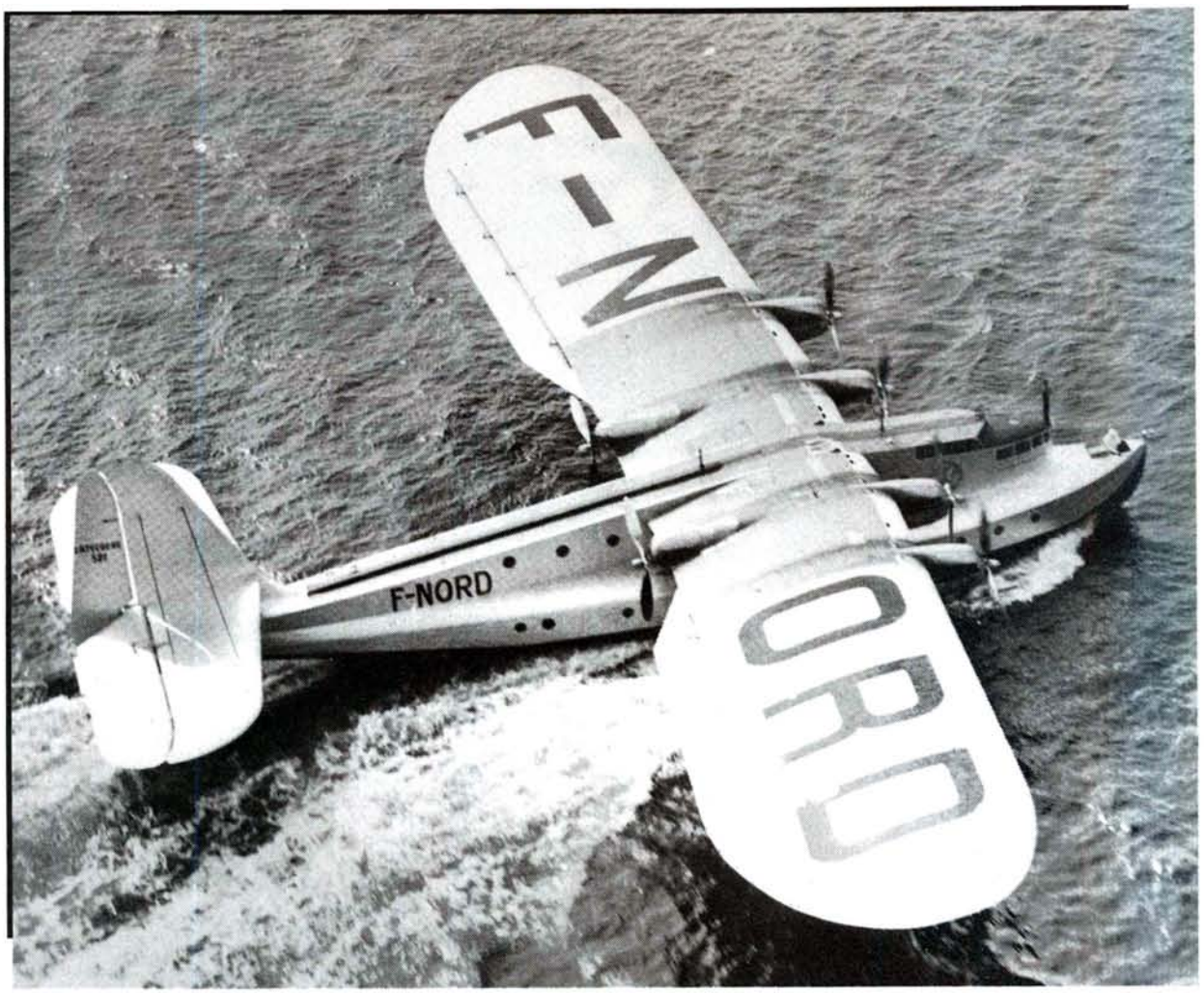
Early shipboard reconnaissance planes, like this one, were lowered into the water with a ship's crane. This one awaiting reassignment after overhaul at the Brooklyn Navy Yard, circa 1933.

The experimental, delta-wing Convair Sea Dart was the first seaplane to exceed Mach 1. Of course, the Westinghouse turbojets did help. Too bad they took a big drink of water through the intakes and blew up!

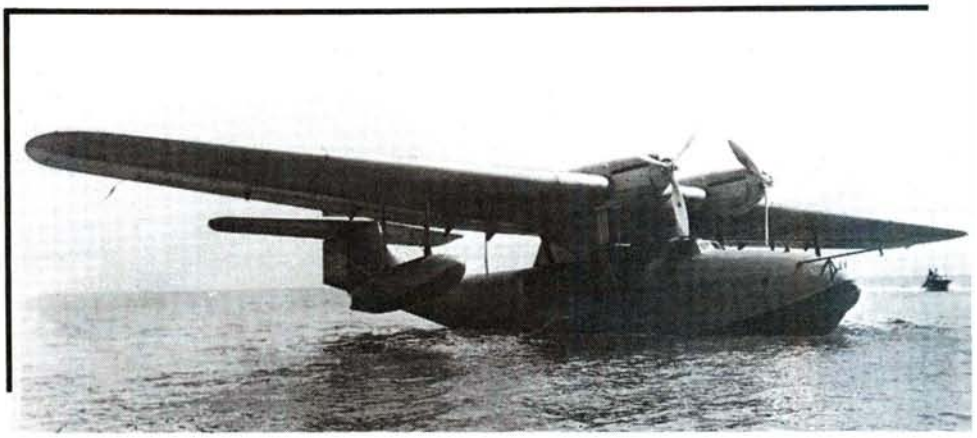
This Curtiss biplane fit into what was then viewed as the Navy fighter role. The photo of this XF7C-1 was taken in April 1927.

The Curtiss R3C-3 Schneider Cup Racer has been fitted with the once revolutionary Standard Steel Company's all-steel high-performance prop.

This Pan Am Clipper is landing on none other than Clearlake in California. Sound familiar? John Sullivan brings us the Annual Clearlake Fun-Fly; still seaplanes after 47 years!! Pan Am officials would use Clearlake as an alternate for inbounds from Honolulu in case the weather at the Treasure Island base in San Francisco Bay was bad. Photo taken 11/10/41



Above: *French Latecoere S21 sported six 890hp Hispano Suiza 12YBR engines. Carried five crew and 20 passengers. Produced as military model also (S23).*
Right: *Liore de Leo H. 47 Naval Patrol Bomber (French) with Hispano Suiza 1,000hp engines. Crew of seven, max speed 215mph.*



The French flying Arch, Latecoere S21 had a top speed of 155mph. This plane was known to get airborne rolling down the launch ramp—well, not really, but it did make some splash.

WEBBED FEET

An easy way to get your feet wet in float flying

by RANDY RANDOLPH

Photo by Wes Moore.

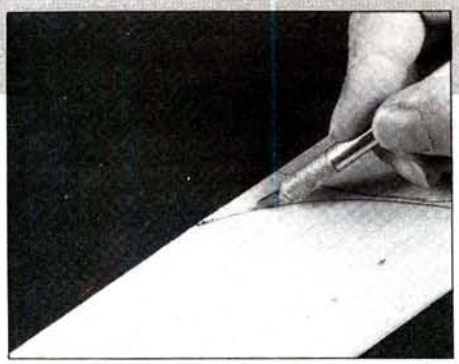
SOME YEARS AGO I often flew free-flight ROW (Rise Off Water) planes, and the type of water gear popular at the time was a large sled float well forward and two, much smaller ones, on the tail. A plane so equipped would leap from the water with no difficulty at all.

Since my Twiliter II has a lot in common with those old free-flight birds in the weight, power and size departments, it seemed logical to adopt that type of system to convert the old boy into a float plane. It worked very well indeed! With an O.S. .10 powering the bird, it takes off from the water in about 50 feet. However, if the waves are over five inches high and the wind is blowing, it had better stay in the car—this is a calm-weather bird. The floats aren't to blame; the fault is in the design of that particular airplane. The tip dihedral causes it to dunk the down-wind wing when taxiing across a breeze over 10mph. But on calm summer days, it's a delight!

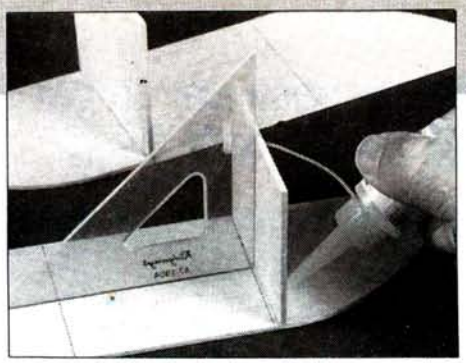
The gear shown in the drawing is quite adequate for small .10- to .15-powered airplanes in the 28- to 34-ounce range, with wing loadings of about 10 ounces per square foot. Obviously, heavier aircraft will need larger floats; a good rule of thumb is to provide 5 cubic inches of main float and 1.5 to 2 cubic inches of tail float for each ounce of the plane's *total* weight. This type of float isn't recommended for planes with wing loadings of more than 14 ounces per square foot, unless they're powered by considerably larger engines.

All three floats are made in the same way: 1/16-inch balsa sides with 1/8-inch balsa bulkheads covered top and bottom with 1/16-inch sheet balsa. The main floats have two bulkheads reinforced in the mounting area with 1/8-inch plywood doublers. (The mounts themselves are also 1/8-inch plywood.) The finished floats are painted with Balsarite and covered with Micafilm. To date, they show no damage from contact with the ground or gravel, nor from numerous grass landings.

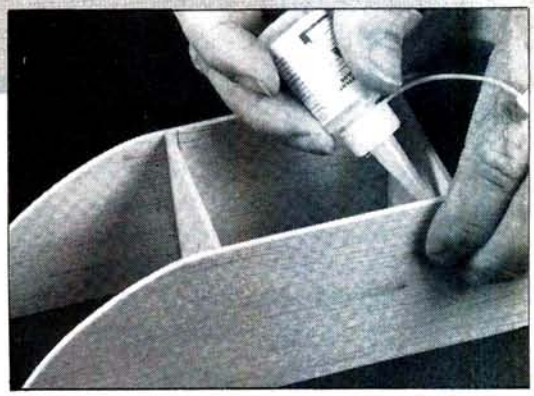
The photos show the construction sequence, as well as details of a simple torsion mount that can be added to the fuselage so that the main floats can be mounted far enough forward. The entire float system can be removed easily to convert the plane back to land duty. The total weight of the whole works is less than the weight of two 3-inch wheels!



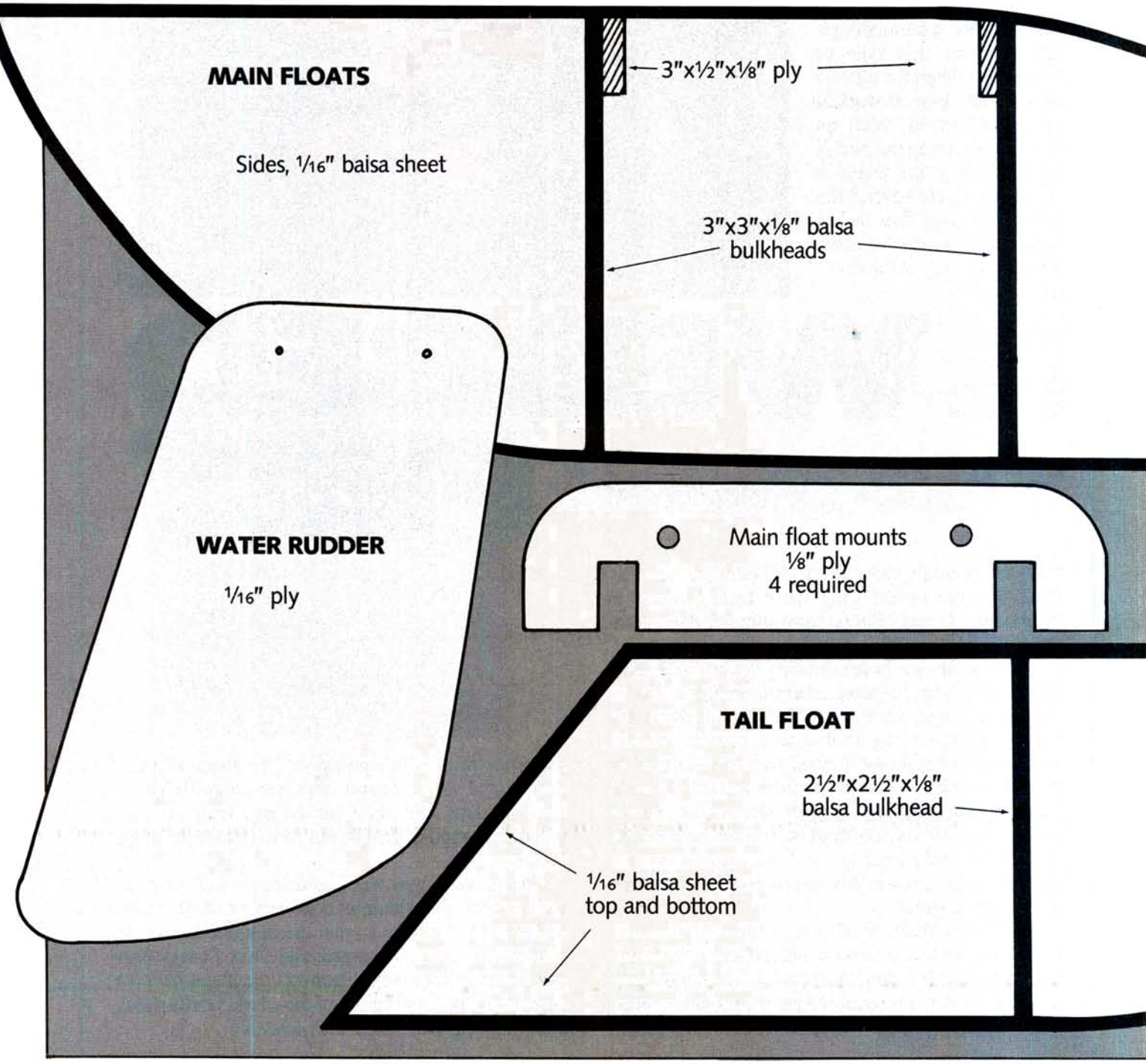
1. The main floats are 3 inches square, so slicing the sides from 3-inch sheet balsa is simply a matter of two curving lines for each one. Four sheets of 1/16- by 3-inch balsa 36 inches long should be enough for all three floats, with material to spare.

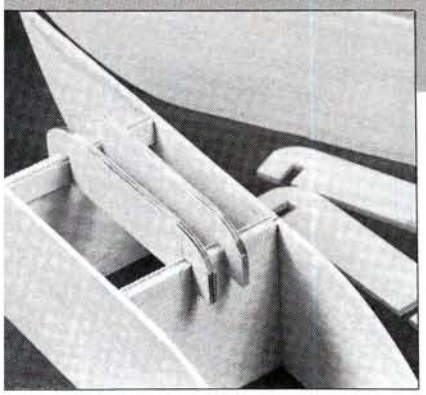


2. The bulkheads for the main floats are 3-inch squares of 1/8-inch balsa and a 2½-inch square for the tail float. For the main floats, locate the forward bulkhead on one float side and the aft bulkhead on the other.

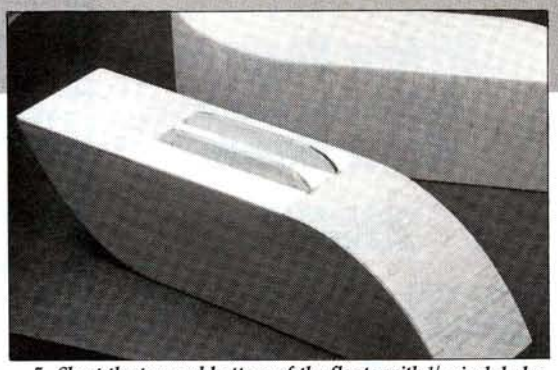


3. Join the two sides by laying them on a flat surface, making sure the front and back edges are square with the sides, and glue.

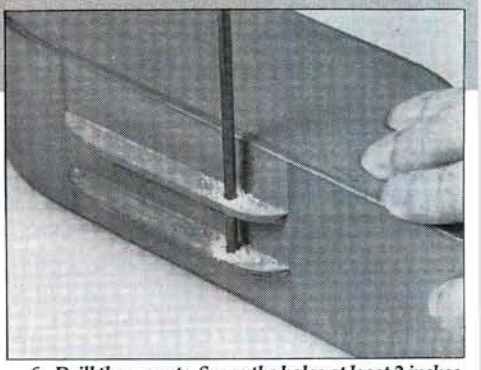




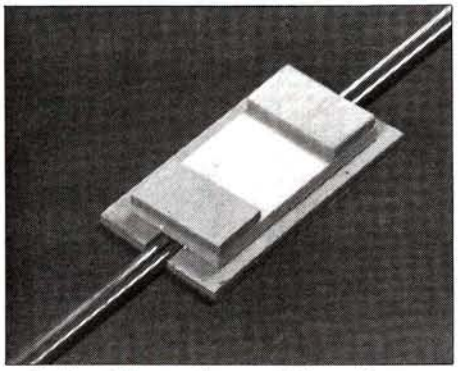
4. Add the ½-inch-wide plywood doublers to the top of the bulkheads and glue the mounts to the bulkheads and doublers. Space the mounts ¾ inch apart at the center.



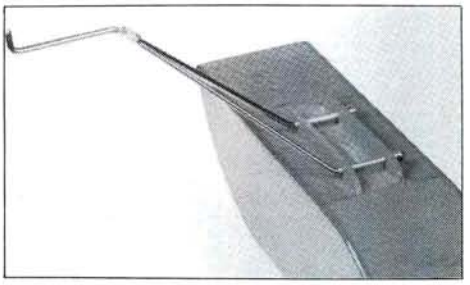
5. Sheet the top and bottom of the floats with 1/16-inch balsa. The grain should run across the floats, except in the area of the mounts, where it is parallel to them. Sand everything smooth, then paint with Balsarite and cover. I recommend Micafilm.



6. Drill the mounts. Space the holes at least 2 inches apart and centered on the mounts. The forward hole is 5/16 inch in diameter and the aft hole ⅛ inch. Epoxy 1⅛-inch lengths of 5/16- and ⅛-inch brass tube through the holes.

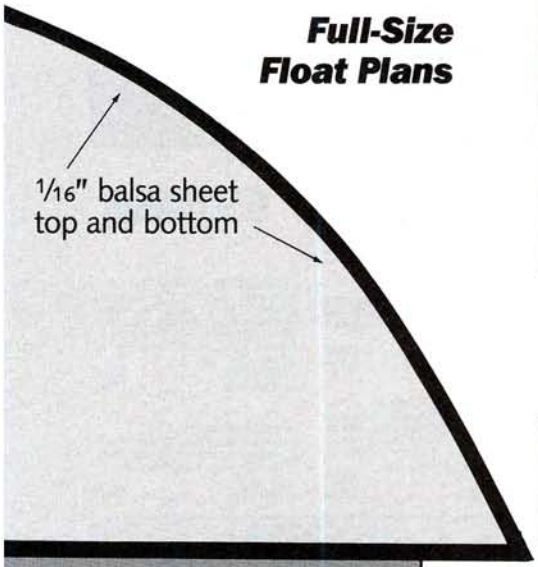


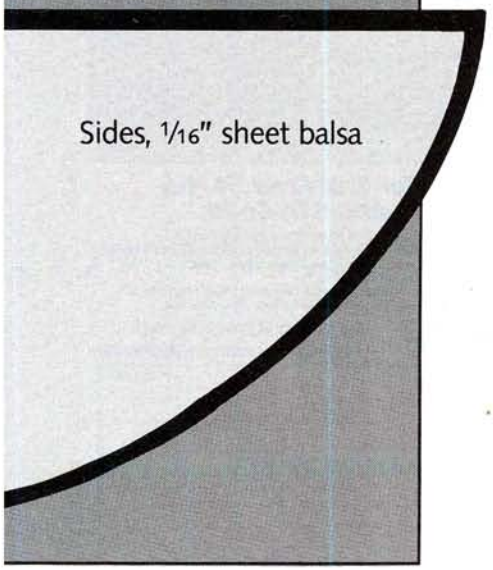
7. To get the gear far enough forward, you may have to build a torsion gear mount from ⅛-inch plywood as shown and epoxy it into the fuselage just behind the fire wall. The supports and the spacer should fit between the fuselage sides, and the plate should butt against the sides on the bottom.

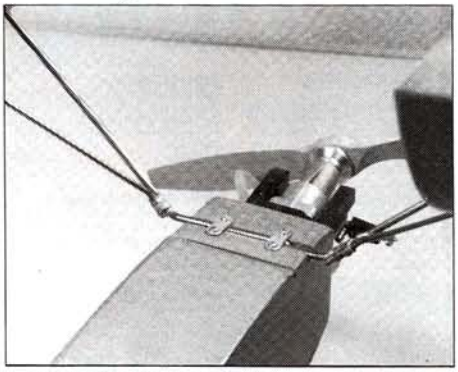


8. Make the main gear struts of bent ⅛-inch music wire. The floats should be spaced so that the distance between them is about 25 percent of the wingspan and their trailing edges should be even with the leading edge of the wing. Prop clearance should be about an inch above the plane of the float tops. Make the support strut by bending 3/32-inch wire, then mount the struts into the floats and wrap the joint between the main strut and the support with soft wire. Don't solder just yet.

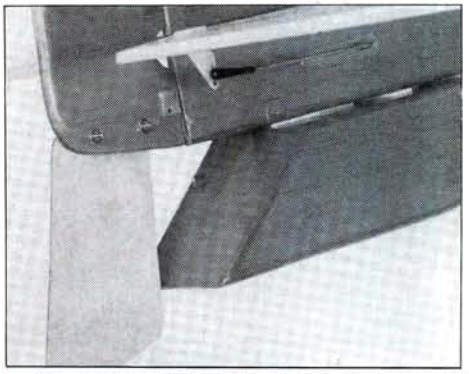
Full-Size Float Plans



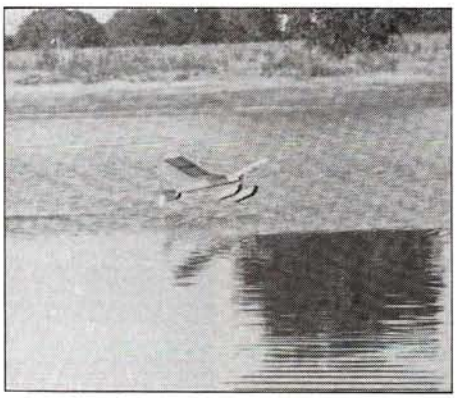




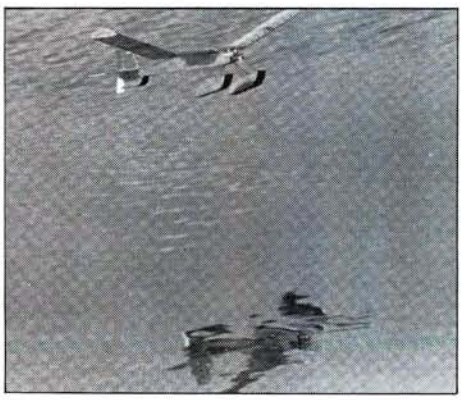
9. Mount the floats on the fuselage and adjust them so that their bottoms are at a 10-degree angle with the center line of the fuselage. When both floats are aligned with the fuselage and each other, solder the wrapped joint with a hot iron and acid-core solder.



10. Cut the water rudder from 1/16-inch plywood, paint it with Balsarite and mount it to the bottom of the rudder with 2-56 screws, washers and T-nuts. Mount the tail float just ahead of the rudder with servo-mounting tape and head for the lake!



11. The plane is airborne after a relatively short run; this type of float tends to "squirt" the plane into the air. When taking off, give it full power, keep it straight into the wind and let it do its thing!



12. Nose high and carrying a little power, Twiliter II settles in for a... landing? The water rudder is effective during take-off and taxi.

The "Inner Workings" of the Aquatic Airplane Made Understandable

ANATOMY OF A FLOATPLANE

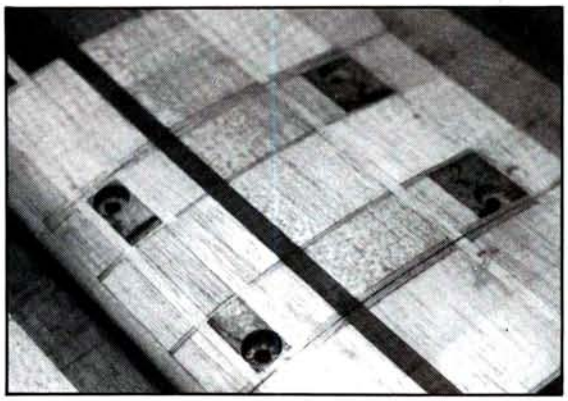
by JOHN SULLIVAN

MAN's *John "Floating Around" Sullivan—what a guy!*

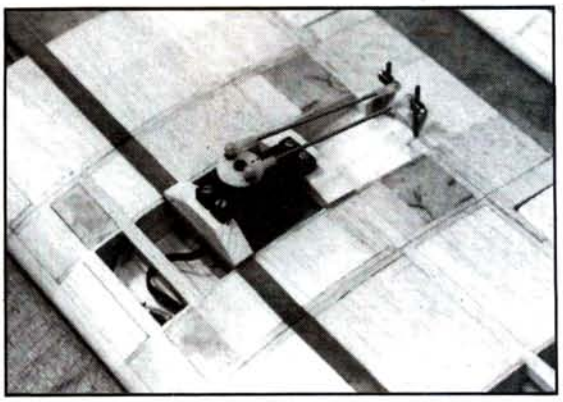
In September 1987, I wrote an article entitled "The Basics of Float Flying." It had a strong nuts-and-bolts approach towards floatplanes and emphasized float dimensions, incidence relationships and priority items. That article still provides good reference material for the first-time float flier and is available through *MAN's* back-issue department* at $3.50 a copy. But for this, our second annual special float issue, I'll be a little more general and address the incredible growth we've experienced in float flying, and the diversity of aircraft and equipment that this growth has brought with it.

One note of caution before I begin: At times,

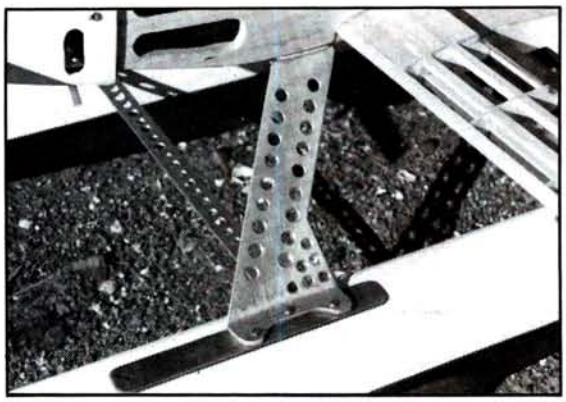
ANATOMY OF A FLOATPLANE



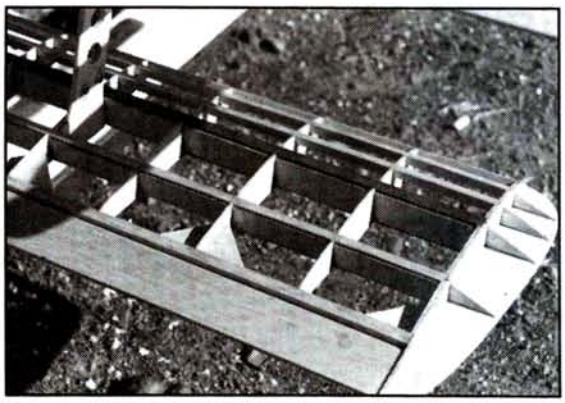
Two-ounce glass cloth at dihedral joints allows discontinuous redwood spars for simplified construction. Note end-grain balsa hold-down blocks.



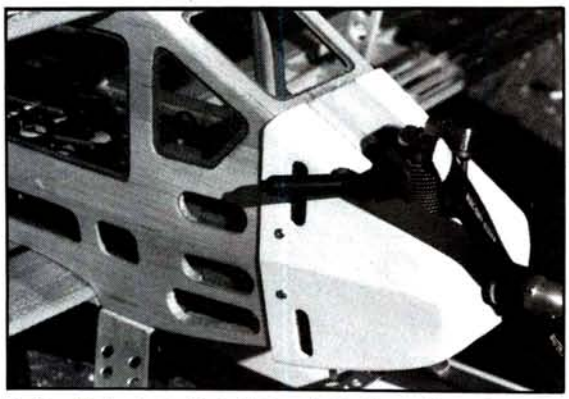
Aileron servo and torque rods installed. Inset sheeting allows identical ribs on constant chord wing.



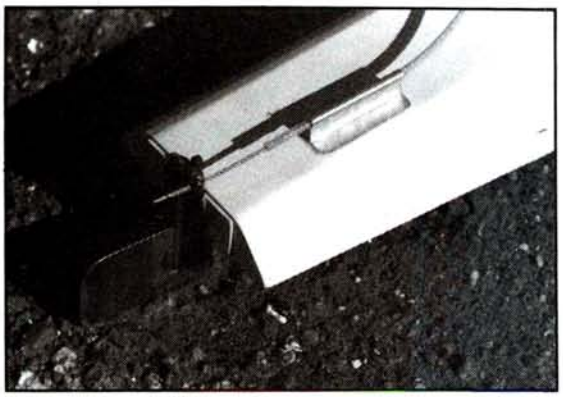
TG aluminum gear and spreaders were drilled to save weight. Hold-down screws are staggered to resist twisting. Float rub rails visible at lower right.



Featherweight balsa wing tips, ribs, trailing-edge stock and spar stiffeners. Weight-saving techniques important on floatplanes.



Saito .65 4-stroke installed upright. The author plans to install J'Tec in-cowl muffler for cleaner operation. Note 1/64-inch ply window backing.



Aluminum standoff holds Du-Bro rudder cable. Balanced rudder provides positive steering.

when a subject is dissected, and then divided again, and analyzed even more, a newcomer can be discouraged by the apparent complexity. With float flying, this simply isn't the case. It has always been possible to strap an extra gear blank, a pair of ready-made floats and a rudimentary rudder system on your favorite plane and to experience a very successful first effort at float flying. In other words, read everything you can about floatplanes, but don't let the flood of information stop you from trying what just might be the biggest blast model aviation has to offer.

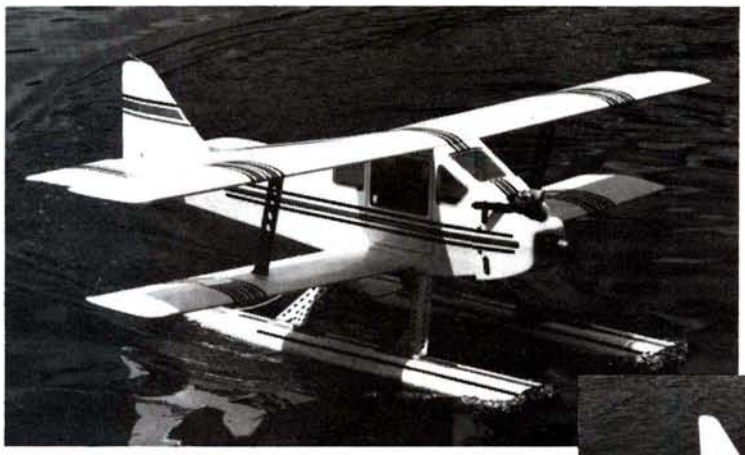
The plane I chose for this article has quite a few subtle alterations that befit a floatplane. It's scratch-built, and grew out of a desire I had to own an Ace* 4-60 Biplane. Ace never made one, so I did. The building process involved making a ruler that converted the 4-40 Biplane plans to a plane with a 60-inch span for my Saito* .65 4-stroke. As I see it, a scratch-built project is very appropriate for illustration here, because the conversion of nearly every plane to floats will involve some sort of custom work. That may stop a few of you, but no pain, no gain.

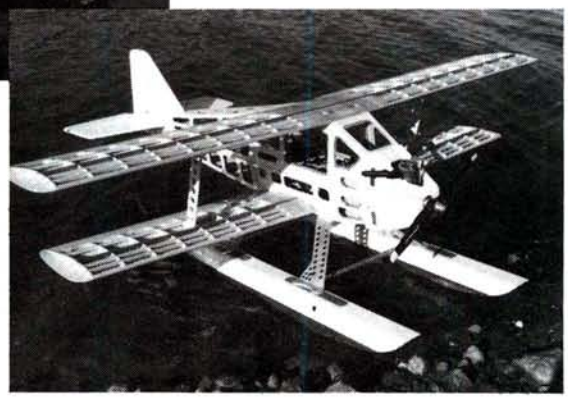
Let's look at the front end first. With floatplanes, your choice of an engine can be anything except a ducted fan slung under the fuselage, as this would give you the world's worst jet drive. When a floatplane takes a spill, it invariably winds up upside-down with the nose (and precious engine) in the water. I actually lost a Saito .80 when it crashed into a lake. I found it seven months later buried in the mud, replaced the bearings and ran that little gem with no problems.

Since 4-strokes are the most complex internally, and don't have highly

pressurized crankcases, it's best to have an after-dunking routine that goes beyond the normal five-minute run required for 2-strokes. Two areas—the rocker boxes and the float bearings—require more attention. Usually, there are a few drops of oil-coated water around the valve train. After taking the rocker covers off, blow away or wipe down the area and put a fresh coat of after-run oil (Rislone, Marvel, etc.) over everything and close up. To clean the front bearings, I stand the plane on its nose and shoot WD-40 into the crankcase pressure-relief nipple until a milky-white substance drools out around the prop hub. After letting that sit for a minute, I start the engine, idle it for a couple minutes, and then run it at varying speeds a few minutes more. I've been running four different 4-strokes for two years now, and the only bearings I've had to change were in an O.S. 90 that I *didn't* service after a spill.

There are a few other engine/float operation hints worth mentioning. If you don't have a sound interlocking joint with tri-stock support between the fire wall and fuselage sides, it's a good idea to cable the engine to a float strut to prevent its loss if the nose cracks off in a crash. A floatplane is harder to work around because of the presence of the floats, so make your needle valve, choke extensions and tank fillers easily accessible. Finally, if you want the engine compartment to be isolated from the tank bay in a spill, try putting silicone around the fuel tube and throttle push-cable exits in the fire wall.





Left: *Adequate rudder control allows tight turns in displacement mode. Music-wire spreaders replaced aluminum originals for further weight reduction.*
Below: *Front quarter-view shows drilled mahogany ply interwing struts and forward fuselage panels drilled for saving weight. Top wing unbolts for fast equipment access.*

The fuselage is a good place to start talking about weight reduction in a floatplane. Floatplanes have the advantage of a four-point system for landing-load distribution. In most cases, a ⅛-inch plywood plate doubler in the area of the fore and aft attach points is all you need to reinforce the area. Say goodbye to all those ½-inch, maple, landing-gear blocks; they're not necessary. Cowls can be built lighter and wing saddles made less sturdy, because water is a much more forgiving element to tumble around on. If you're scratch-building, take the time to punch out more holes and cut down on bracing, gussets, the use of epoxy, etc. In many cases, you'll be able to subtract wheels, retracts, excess fuse weight or whatever, and still be lighter than a land plane when floats are added. For years, electric modelers have been successfully lightening their planes to accommodate added battery weight.

Wrigley Bipe about to come on step. Note spray pattern produced by flat-bottom float configuration. 0/0 float decalage allows zero elevator movement until takeoff.

With the exception of spruce, most building materials will take a soaking and dry out without warping. If your plane happens to spend a few minutes on its head, you might find water in the center and fuselage bays. Take a few extra minutes to paint those interior areas with polyurethane (one quick coat) and make the foam surrounds for your tank, receiver and battery easily removable. That way, you can dry out the fuse, wring out the foam, run your engine, and be flying again in half an hour.

Flying hulls, or amphibians, and pylon float arrangements are also becoming increasingly popular with float fliers. Since this month's "Floating Around" addresses pylon setups, I want to include amphibians in our discussion of fuselages. Amphibians have the

(Continued on page 89)

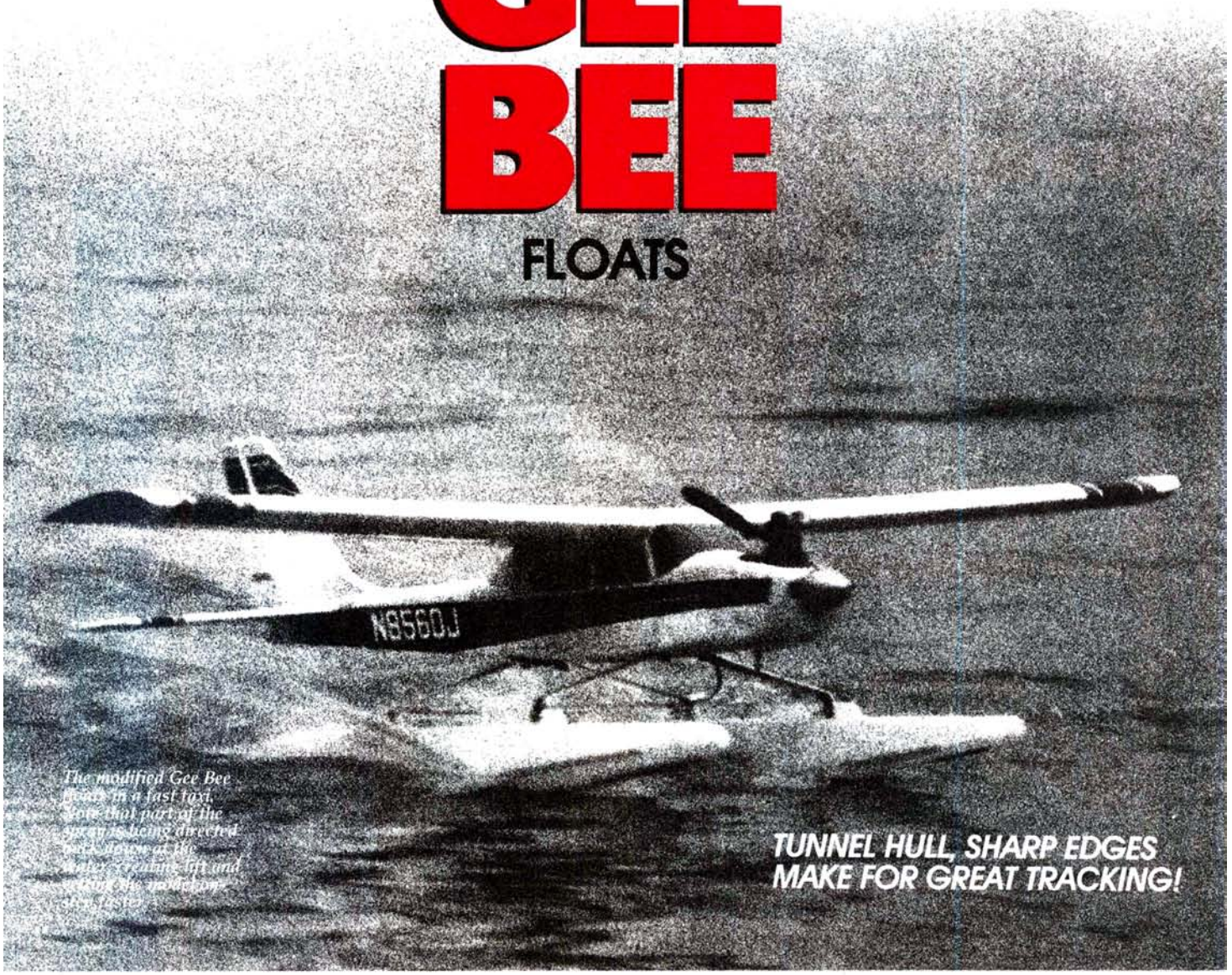
by CHRIS CHIANELLI

PERFORMANCE MODIFICATIONS FOR GEE BEE FLOATS

THE 28 INCH AND 33 INCH polypropylene Gee Bee* floats have been around a long time, and they're operable right out of the box. However, with only a half-hour's effort, their performance during takeoff and landing can be greatly enhanced. Since they are inexpensive, newcomers to float flying are often attracted to them, and their initial performance can be discouraging, especially to those who have little experience.

The problem with the Gee Bee float is that the vee-shaped hull design is too deep. This isn't a design flaw per se, but results from the method of manufacture. In blow-molded units like these, the sharp vee angle reinforces the hull bottom, just as the ridges in a long, flat, car hood reinforce the hood. The two planes converging at a more acute (sharp) angle give the hollow Gee Bee float rigidity at the apex of the vee. (This is why angle iron is so much stronger than a flat piece of equal thickness.) The remedy of this shortcoming takes so little time and makes such a great difference, that there's no reason to hesitate before buying a set of these floats.

The concept is simple: Take the force of the water that's flowing outward and upward in both directions from the center of the float *away* from the hull center line (the sharp pointed vee bottom) and force it back down again with equal force. This greatly increases the effective lift of the float. The next time you're at a float fly,



The modified Gee Bee floats in a fast taxi. Note that part of the spray is being directed downward by the water-creating lift and thrust the seaplane.

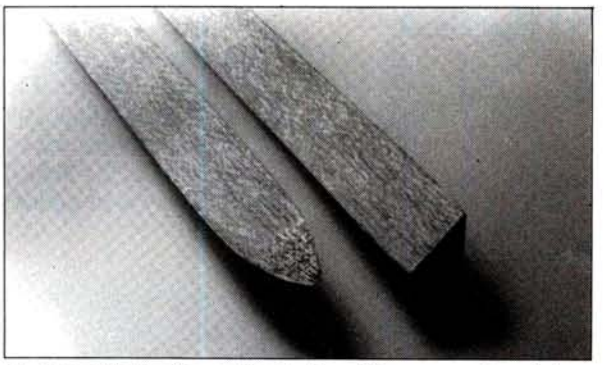
Photos by Steve Pond.

watch how the planes using Gee Bee floats take off. Most of the time, they jump off the water in a very unscale-like fashion. This is caused by the less-than-optimum lift a deep-vee has to offer, compounded by the smooth plastic bottom that creates adhesion, or surface tension, which must also be overcome.

I've installed two lengths of triangular stock at the outer edges of the floats extending from the step forward about two-thirds to three-quarters of that length. On each float, these two pieces increase lift and get the float on step faster. Did you ever see how fast a flat-bottom float gets on step? However, they have problems too, e.g., in choppy conditions, but the modification will also create a helpful turbulence under the float at takeoff speeds, and the model will break water more gracefully, rather than jumping into the air. These added spray rails can be compared to planing chines on the hull of a speedboat.

The sequence of modification is as follows: Cut four sections of triangular stock and sand the forward ends as shown in the picture, so that you don't have a blunt end toward the flow of water. Next, lay the tri-stock from the step forward and, with a pen, mark around the

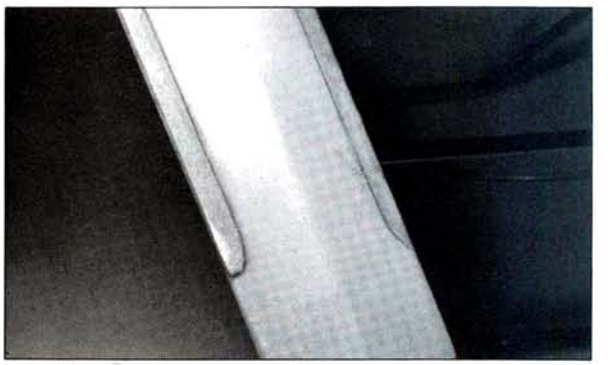
(Continued on page 104)



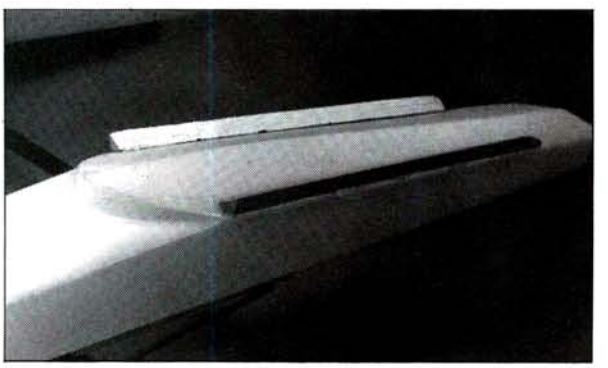
1. Round the leading, or front, edge of the spray rails and give them a light sanding. They may be painted or given a coat of CA for sealing purposes.

2. Outline areas on the float to receive contact cement. This greatly speeds coating process.

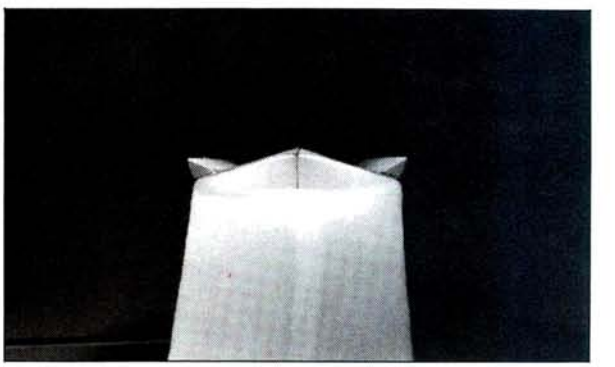
3. Put on a thick coat of contact cement. (I used Dap Welwood.) The glue should overextend the line by no more than $^{1}/_{16}$ inch. Next, a coat of glue should be applied to the balsa rails on the surface that will mate with the float.



4. Allow the contact cement to become tacky; then position the rail using the guidelines. Make sure you get it right the first time!



5. The finished float should look like this. The rails may be painted at this point, if so desired. Note that the rails extend to the step.



6. The finished float creates an entirely new shape to the wetted surface; one which reduces drag and improves water handling.

Small Steps

by JOE WAGNER

LAST JULY, I attended the Flying Aces Club (FAC) Nationals, a biannual model contest that I never miss. Small, lightweight model airplanes (some of them mine) filled the skies at Geneseo, NY. They don't fly R/C there, but during this meet I saw many flights that were adversely affected by something that's also troublesome to our miniature R/C models: air turbulence.

Anything that can flow is a fluid, and thick, viscous fluids, like honey, flow with little turbulence. But the thinner the fluid (think of water and gasoline), the more it splatters and splashes when it hits something. Although its viscosity is far lower than that of any liquid, air is also a fluid. Because air is invisible, the surges, whorls, countercurrents, and eddies cannot be seen in wind that's flowing through and around obstructions. The erratic behavior of small, light models frequently demonstrates that this turmoil exists. Airflow downwind of buildings, parked cars, and trees can be as turbulent as rapids in a river. Just like a boat that is rocked, tossed, and sometimes even upset in "white water," a small, lightweight airplane can be badly disturbed in agitated air. This effect is worse close to the ground where it can hurt model flyers the most. For the sake of safety, much of our flying is done downwind of buildings and parked cars; however, our models must often fly in turbulent air during takeoffs and landings. The higher the wind speed, the rougher the air gets. (On the second day of the FAC Nationals, the turbulence was so severe at times that some models were flipped upside-down in flight.)

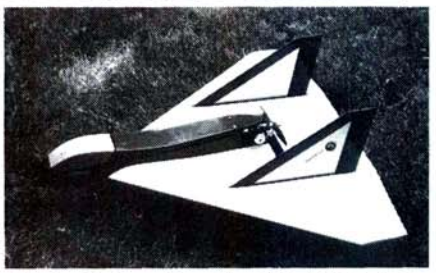
There is one real advantage that large, heavy R/C models have over our small, lightweight airplanes: They've got much more inertia to prevent rough air from upsetting their flight path. Inertia is what model flyers are really talking about when they say a model has "penetration." Inertia is, of course, the tendency for a movable object to continue what it's already doing. For example, a heavy flywheel wants to keep spinning at the same speed once it gets turning. That's why it's so useful in smoothing out the intermittent power impulses of a car's engine. In the same way, a heavy model airplane wants to keep on flying straight through a momentary, upsetting gust; its inertia stabilizes it.

But this doesn't mean that small R/C models need added weight! Quite the contrary. Bad effects would outweigh any benefit that might be gained from the added inertia. Light weight is vital to the success of small airplanes, and air turbulence is something we'll just have to live with.

Coming home from the FAC Nationals, I stopped to visit with Ralph Pearson in Falconer, NY. Ralph is about the most enthusiastic designer, builder, and flier of small R/C models I've ever met. He has a fleet of them, all beautifully constructed

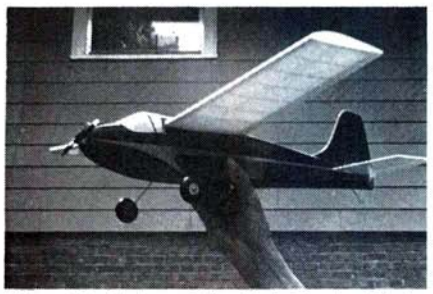
(Continued on page 98)

Ralph Pearson with "Short Stuff," his semi-scale twin, powered by two Cox "Medallion" .049s: 44-inch span, 220 square inches, 28 ounces.



Ralph's ½A version of Laddie Mikulasko's "Force 1": 24-inch span, 270 square inches, 18 ounces. It easily takes off from grass.

"Diamond Jim" sports an unusual airfoil: .15-powered; 44-inch span, 350 square inches, 44 ounces with an ACE 4-channel control system.

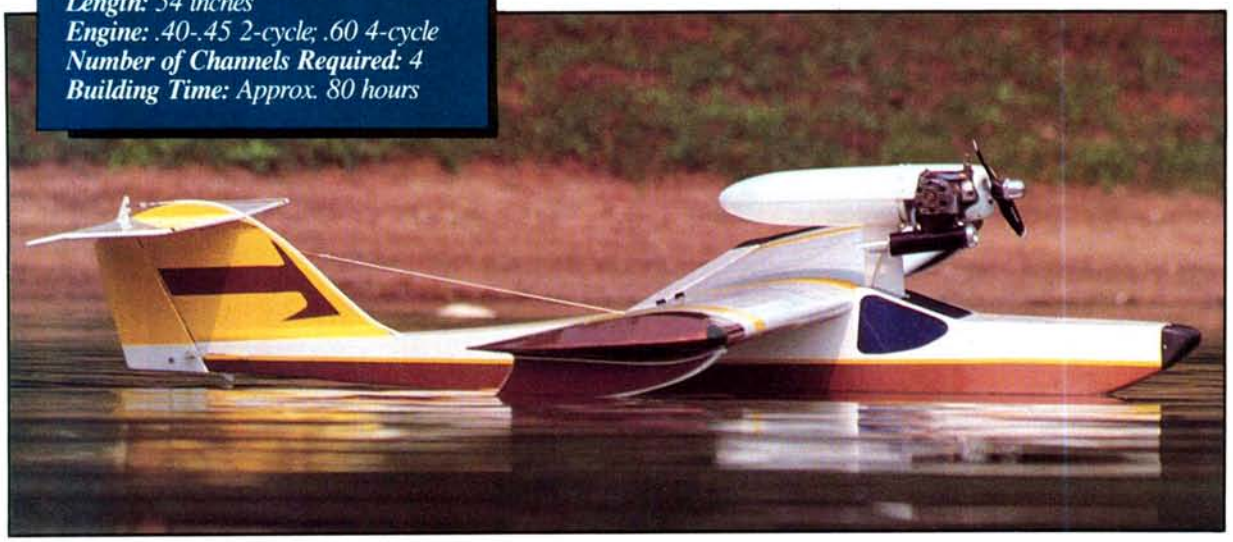


"Sweet Sue" (named for Ralph's daughter): TD .020-powered, 28-inch span, 140 square inches, 12 ounces. Rudder, elevator, and motor control.

SPECIFICATIONS

Type: *Amphibian (Land adaptable)*
Span: *59½ inches*
Wing Area: *725 square inches*
Wing Loading: *22-24 ounces per square foot*
Weight: *7 pounds, 6 ounces dry, ready to fly*
Length: *54 inches*
Engine: *.40-.45 2-cycle; .60 4-cycle*
Number of Channels Required: *4*
Building Time: *Approx. 80 hours*

SO MUCH FUN YOU COULD CALL IT THE FLYING LOVE BOAT



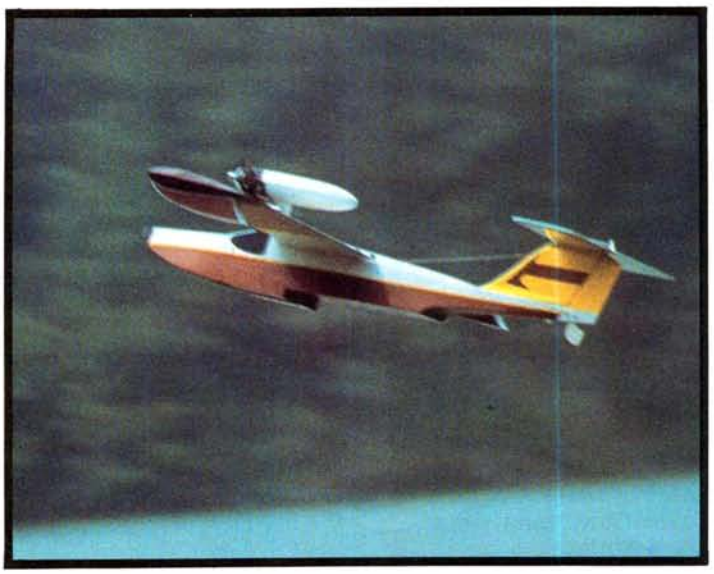
ACE R/C

SEAMASTER 40

by RICHARD PURDY

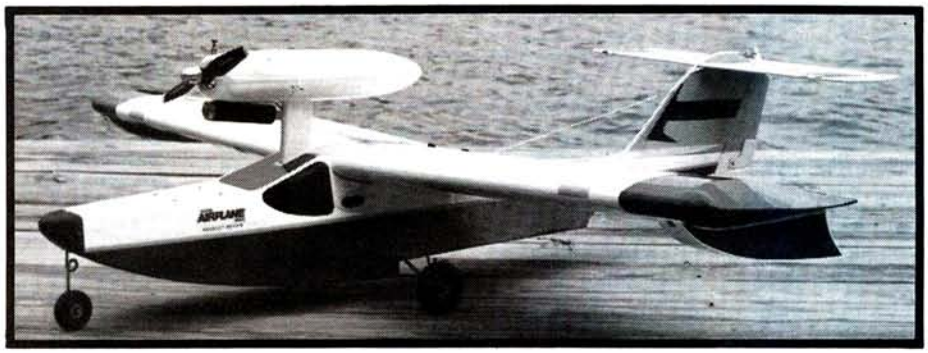
IF YOU'VE BUILT Ace* kits before, you already know the quality you can expect in the new Seamaster 40, and if you're hooked on the model airplane hobby, you probably also know of "Mr. Sunday Flier," Ken Willard, who designed the plane. The Seamaster is an amphibian with removable wheels for water operations and removable wing-tip floats for flying on land. This Ace/Willard combination has produced a different kind of sport plane, which should excite your flying buddies and give you a stimulating departure from the ordinary project.

The kit comes in a hefty 9x4x38-inch box and is sturdily packed for shipping. Most of the plane is comprised of light ply, which has been very accurately die cut.



Photos by Richard Purdy and Richard Uravitch.

(Only a few pieces needed a little persuasion to drop out of their matrix sheet.) The wing ribs and tail surfaces are die-cut balsa, and the small wooden components and hardware are complete and are sorted into five plastic bags. Wooden materials are well-selected and suited to their purpose. A pair of ABS plastic halves is provided to form the engine nacelle/pod, and a single ABS piece, when cut out and fitted to the hull, becomes the pointed bow of the fuselage. The plan is a single rolled sheet (38x68 inches), and there is a neat instruction booklet, liberally laced with photos.

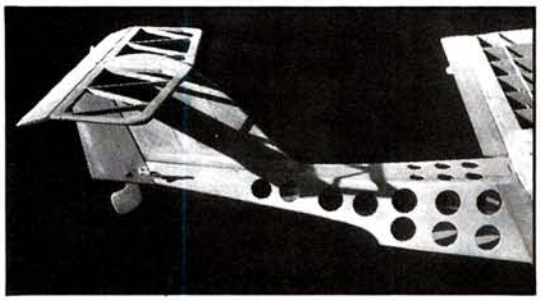


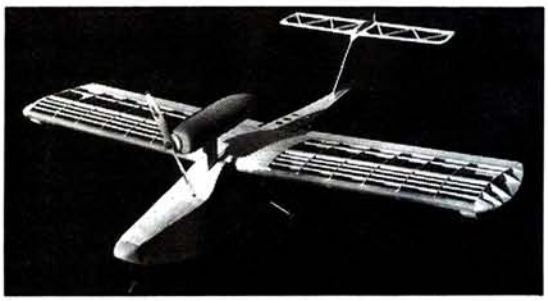
Plug in the wheels, unscrew the tip floats—and the Seamaster becomes the "Landmaster."

CONSTRUCTION: Whenever I begin a project, the wing invariably comes first. The Seamaster has a one-piece, built-up wing with a semisymmetrical airfoil. The design is a balsa-and-spruce structure with a unique and curious feature: The entire leading edge is a ⅞-inch-diameter cardboard tube. The tube is heavy gauge, so strength is enhanced, and resilience to dings may also prove to be an asset. Ace uses spruce sticks set into rib notches, which run longitudinally along the forward surfaces of the wing. These are called "turbulators" and they replace the more conventional, curved balsa sheeting at the leading edge. Spruce spars and turbulators lend strength to create a very rugged wing.

The tail feathers are made up of ¼-inch balsa-sheet segments glued together to form the fin, rudder and elevator. The horizontal stabilizer is a built-up balsa frame, which helps to keep the tail light. In this plane, the stab sits atop the fin, thus avoiding water spray in the aquatic mode. The elevator is controlled by a cable-in-sleeve system that runs from the servo area in the hull up to, and along, the leading edge of the fin, and ends at a clevis and horn above the elevator (a simple solution to a sometimes difficult problem).

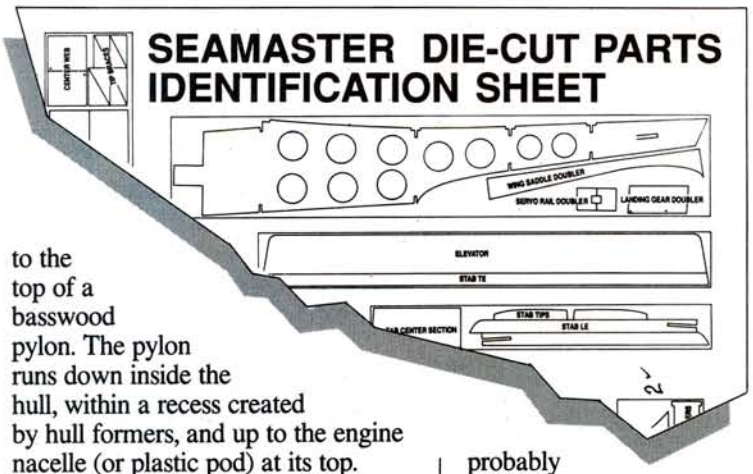
The fuselage of the plane is also a boat hull, and it's fun to work with this uncommon shape. The shell and formers are of 3mm light ply, and the die-cut pieces fit so well that alignment is practically automatic. The hull is flat-bottomed, with only a small, square, spruce stick glued to the center line as a keel for directional stability. The hull form is well-designed to avoid complications in assembly, although the novice is advised to proceed slowly to ensure tight joints. (Remember, leaks in the hull will prove an embarrassment out on a lake!) I noticed that there were a substantial number of lightening holes punched out of the rear plywood hull sections. Out of curiosity, I saved and weighed them, and I found their elimination had saved a full 1½ ounces at the tail! This saving can have a major impact on total weight when the final balancing act takes place.





Far Left: *The lite-ply fuse sides and top come with pre-punched lightening holes. Horizontal stab is built-up also in deference to weight.* **Left:** *The three turbulator spars just ahead of the main spar are partly responsible for the Seamaster's great slow-flight qualities.*

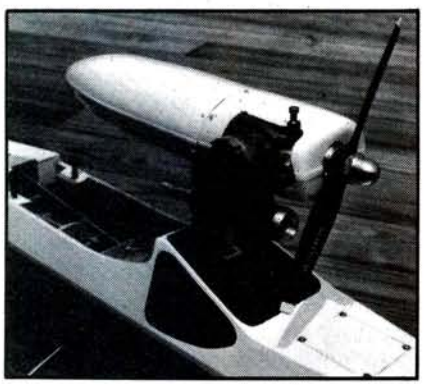
The radio compartment in the hull is so spacious that there's room for your components to shift around as needed for balance, and there's still room for your luggage! One of the surprising aspects of this plane is that it's so large and sturdy, yet it flies on only a .40 to .45 2-cycle engine. The engine mounts on a plywood fire wall, which is epoxied and screwed



This is a partial reproduction of the parts locator sheet that takes a lot of guesswork out of the construction process—a real time saver.

to the top of a basswood pylon. The pylon runs down inside the hull, within a recess created by hull formers, and up to the engine nacelle (or plastic pod) at its top. Both the engine and the 8-ounce fuel tank are contained in the nacelle, which is mounted at the top of the pylon and above the wing. As a rule, I don't like to work with plastic parts that have to be put together with CA adhesive and fiberglass tape, but in this case, the pod halves went together without much hassle, and I didn't glue my fingers into the works, for a change. I found there was adequate room for mounting the tank and engine, so my normal dose of blue language was unnecessary.

I decided that since the Seamaster was likely to see more service on the water than on land, extra precautions would have to be taken to ensure that it was seaworthy. Having never waterproofed an airplane before, I approached this task cautiously, did all the things I'd read about, and probably overdid it!

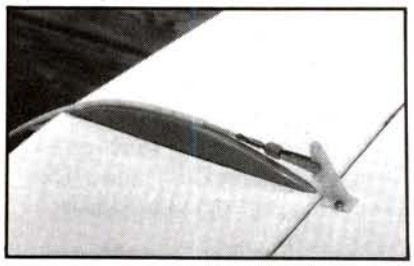


Unlike many other pylon-engined airplanes, the Seamaster's pylon is part of the fuselage. This places the engine weight a little farther forward and simplifies wing mounting and removal.

For a number of reasons, the covering I selected was Top Flite's* MonoKote. I felt comfortable working with it; I had a sufficient quantity of the color I wanted on hand; but most important, I had seen other seaplanes covered with it and they seemed to be in fine shape, even after a season or two of wave-hopping.

Regardless of the type of covering you choose, be sure to take a little extra time when applying it. I can't stress enough the importance of making sure all the edges of the film are securely bonded. It's also a good idea to overlap the seams just a little more than you normally would. (I tried to maintain about ¼ inch.) After all the covering and trim application had been accomplished, I applied a single coat of Loctite* Finishing Resin to the entire inside of the hull (fuselage) from the trailing edge of the wing forward. This got a little tricky when working in the forward hatch area, but a balsa extension to the disposable brush made things slightly easier. The waterproofing operation was completed with the application of a form-in-place seal between the wing and fuselage. I used Loctite silicone sealant adhesive here. I then gave the entire airframe a once-over for any raw wood, exposed seams or open passages, and I fixed all I found. I *did* say that I may have overdone it, didn't I?

The radio installation was quite easy, mostly due to the cavernous radio compartment. I found that the removable hatch in the forward fuselage was unnecessary. I wrapped the battery and receiver first in foam, then in plastic bags for waterproofing, and then positioned them in the main radio compartment, just forward of the servo. The Seamaster balanced exactly where specified. Come to think of it, I don't know why the hatch is even there: I can't imagine this plane coming out tail heavy, which would require placing the battery or ballast in the forward compartment. A lighter engine than the recommended .40-.45 probably wouldn't produce the best flight performance. You may consider gluing the hatch in place if the balance of your Seamaster appears OK; it will eliminate another possible water intrusion source.



The elevator on this T tail setup is linked to the servo by a flexible Ny-rod that is snaked up the leading edge of the fin. Ace has really done their homework. Clevis safety band not yet in position.

PERFORMANCE: We decided to make it a "happening" when we flew the Seamaster for the first time. I invited Chris Chianelli and Rich Uravitch to our club lake with the stipulation that the price of admission was flying their own seaplanes. Chris showed up with an EZ Mermaid, and Rich brought his EZ Decathlon on EZ floats. I don't think either one of those guys does half the building they say they do!

I expected the Enya .40 CX to perform flawlessly because it had never failed me before: I was wrong. After much unsuccessful trouble-shooting, I tried a new plug and the engine ran fine. If you're experiencing problems (e.g., with idle, throt-

READER REPORTS!

MINI FIELD & BENCH

I ordered the Ace Seamaster 40 the same day I saw the first ad with a picture of the airplane. I simply couldn't resist a new Ken Willard design that could use the O.S. .40 FP I'd received for my birthday. Six months later, I own the ship shown, resplendent with the US Coast Guard color scheme. It took nearly as long to research the color as it did to build the model.

The plans, assembly manual and kit materials were simply great. I didn't replace any wood (not even aileron stock) and loved everything in the box except the engine pod. After a couple of days of fooling with the plastic halves, I threw the whole assembly in the trash and made a carved balsa pod, which contains the engine and fuel tank. The outline, thrust line and throttle linkage are all exactly as Ken designed them and everything works well.

The radio equipment is a two-year-old Cirrus 7-channel with rudder/aileron mixing, and it

works great. The covering is Super MonoKote with a little trim and graphics.

I have it set up in a ground mode with plug-in landing gear, but I'm looking for a good lake to try water flying.

All in all, this is a really great kit if you like to build, but I wouldn't suggest it for a first-time project.

Carlton Molesworth
Frederick, MD

I recently obtained an Ace Seamaster kit and found it to be of average quality. I wasn't too happy with the cardboard tube that became the wing leading edge, but, so far, I cannot fault it.

The design of the pylon is poor. The pylon is ½x1 13/16 basswood and I was directed to cut away a 1 1/16x2 top portion leaving ¾x2 on which to mount the fire wall and engine. It didn't look too

good, but I did it anyway. The result was a cracked pylon on the second flight. Another flier I know had the same problem.

The engine nacelle comes in two plastic halves that need to be epoxied together. I lined the interior with f/g tape epoxied in place, then cut away the external flange. The mating of the halves leaves a lot to be desired; however, it turned out pretty well. The problem was that after three exposures to the sun (all afternoon in 80-degree weather) the rear portion caved in along the joint and then puckered up and cracked. My friend's didn't do that, but he'd left most of the flange showing.

On the plus side, it's a nice-looking airplane and receives a lot of attention at the field. It flies well, although a little loggy with an ST .45 for power. It builds fairly quickly, and the wing and light ply hull appear to be very strong. It has been flown both as a land and sea plane and handled well in both situations. So far, it has about 15 flights on it (with a new pylon).

C. Milton Peacock
Finksburg, MD

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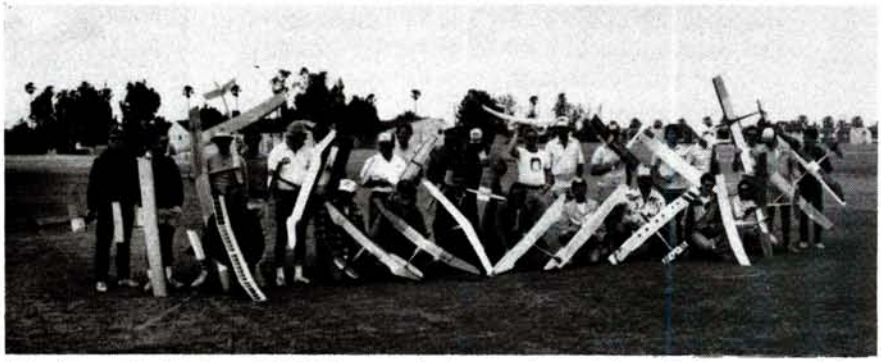
tle response) try a new plug before you start ripping your hair out. I hefted the nearly 7½-pound Seamaster to the water's edge, thinking that I might have chosen an engine that was about .15 cubic inches short on displacement, but then I remembered Ace's words in the instruction manual: "Don't be tempted to put a screaming .60 Schneurle 2-cycle on it; it's a mildly aerobatic sport ship for pleasing, predictable performance off land and water." OK; water rudder down, a little power and let's taxi a bit. It feels fine; the Enya responds well; the lake is smooth; so let's try it. Gradual application of throttle has the Seamaster accelerating smoothly. The plane came up on step very quickly with no spray flying over the

(Continued on page 88)

Quiet Flight

by JOHN LUPPERGER



The pilots at the 5th Annual ISS HLG contest had a great time and showed off some great flying skills. The majority of designs were scratch-built and many showed great promise.

THOSE OF US who appreciate quiet flying really have a lot to be thankful for: we enjoy the *best* of this great hobby of aero modeling. In sailplanes, we have thermal ships of all degrees of simplicity and/or sophistication. We have slope models that can do almost anything a power model can do (depending on the available lift), and there's also the demanding and exciting area of scale sailplanes. In electrics, the possibilities are almost endless: sailplanes, old-timers, sport power, scale, pattern and more!

Everything other modelers enjoy and more—and less! No noise, no complaints from neighbors, and best of all (at least in my opinion), no "goo"! I don't know how power modelers put up with it. I flew power quite a few years ago and it's the only thing I *know* I'll never miss. Ah, the joys of quiet flight.

Great Stopwatch

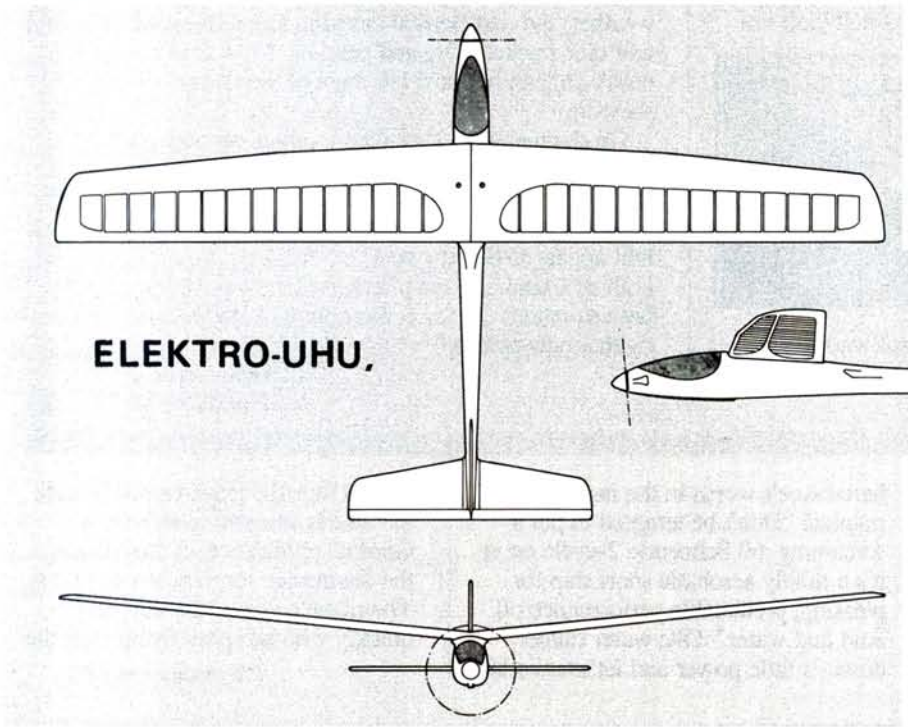
To be a good timer you must first have a good stopwatch. "But," you say, "a stopwatch is a stopwatch. It tells the time in minutes and seconds—tenths or hundredths if it's a good one. What more could you want?"

How about one that counts up and down?—goes past zero when counting down and then up again; gives you the elapsed and target time; has pre-set countdown times; or can be set for any time in minutes and/or seconds.

Well, I've finally found such a watch: It's the Lorus Sports Timer. It seemed impossible to find, but that's another problem I've solved. Sailcraft Hobbies* sells them for $34, plus shipping. Doug Dorton is the owner and also the editor of *Sailplane*, the journal of the National Soaring Society (NSS). If you'd like more info on the NSS, write to Doug at Sailcraft's address.

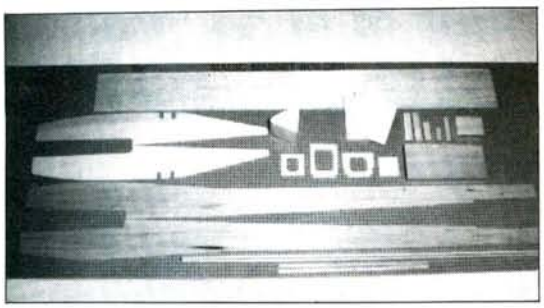
With my Lorus watch, I'm a more effective timer. Let's say that the person I'm timing is going for a seven-minute countdown, the plane comes off the line and I start the watch. There's a button on the face that changes the readout from up to down. I'll start with count-up and let the pilot know, by 15-second intervals, how much time he or she is into the flight. When we have two minutes left, I hit the button and start a two-minute *precision* countdown. Every ten seconds to one minute, then every five seconds to within 15 seconds of the target time, and the last 15 seconds, I count one at a time to zero. And best of all, the watch is counting down for me and all *I* have to do is read it back to the pilot. This watch makes it easy for anyone to be an expert timer.

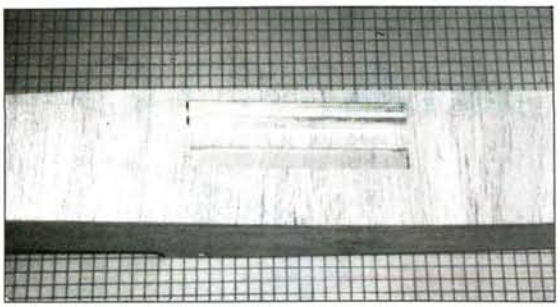
(Continued on page 48)



Three-views show the clean lines of Graupner's new Electro UHU, available from Hobby Lobby International. Straight trailing edge and double-tapered leading edge are common of European kits today.

(Continued from page 46)





Far Left: *The basic parts for the Wanderer fuselage.*
Left: *EJ Lind Magic Magnet Builder makes straight, aligned construction of model much easier than conventional building board.*

Hand-Launch Contest

The ISS Annual Hand-Launch Contest has become the premier event for HLGs, and this was the fifth. The best pilots from California, New Mexico, Arizona, Nevada, and Oregon vied for prizes and trophies on June 5, 1988, in Riverside, CA. The Inland Soaring Society has done an excellent job every year, and this year's event was no exception. The weather reports and the early morning conditions kept the entries down to only 28, instead of the usual 40 to 50.

Arriving on the field at about 7:30 a.m., I was greeted by 20 to 25mph winds. It promised to be a terrible day, but, quite suddenly, the wind died and we had great weather for flying.

The most interesting thing about this year's event was the number of new, scratch-built aircraft. (In the past, the contest was numerically dominated by the Flinger and Bodst.) As the pilots are getting better, the performance of the new designs becomes even more awesome, and they exhibit superb design technology.

Unless you're a *very* good pilot, the older designs that were once in the forefront just won't cut it anymore. Joe Wurts came in 1st, flying an original design with vacuum-bagged foam-core wings and tail surfaces. Dennis Brandt was 2nd, with a modified Flinger, Dick Odle was 3rd, with his original RO-19, I came in 4th, with a stock Bodst, and Allan Guthmiller came in 5th with a one-meter original design.

I'll try to contact some of the designers to ask if they're interested in having their model's plans published. With all the interest in HLGs, I don't think I'd have to twist the editor's arm too much to get one in *MAN*.

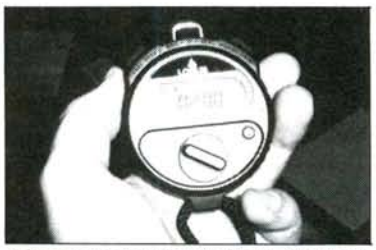
Project Wanderer

Before I start, I want to make something clear: This project to build a better Wanderer is in no way meant to imply that the Wanderer isn't already a good model. The Wanderer has probably trained more pilots than any other glider kit, but kit manufacture necessitates a number of compromises with regard to available materials, packaging and intended market.

Apart from some very high-ticket German kits, there are no perfect kits or designs. That's where *this* project comes in. The changes I'll make in the Wanderer are all things that I've seen others do to the model over the years. These changes will make models stronger and/or fly better (at a slightly higher degree of performance).

I'll start with the fuselage (even though the kit instructions suggest beginning with the wing). My primary concern was to make the fuselage structurally stronger. I won't try to change its aerodynamics, as it's a very simple design that's quite easy to build, and it performs as it was intended.

Following the instructions, the fuselage doublers are glued in place and drilled for the rubber-band hold-down dowels. The sides are then marked to locate the bulkheads and cross-members. Both stabilizer doublers are then glued to the rear of the fuselage. Now for our first modification: From just behind station C, at the rear of the fuselage doubler to the front of where the stabilizer mounts, glue in a piece of ¼-inch triangle stock on the inside top of the fuselage sides. The tail post is then glued to one side. Next, glue a piece of ¼-inch triangle stock from the front bottom of the fuselage to the tail post. Prepare the rear side cross-braces for the fuselage by beveling their ends to glue flush against the triangle stock. Next glue in the 3/16-inch balsa wing saddle.



The Lorus Sports Watch is the best stopwatch available. It counts up and down, and continues past zero. If you want to be a good timer, this is the watch you need!

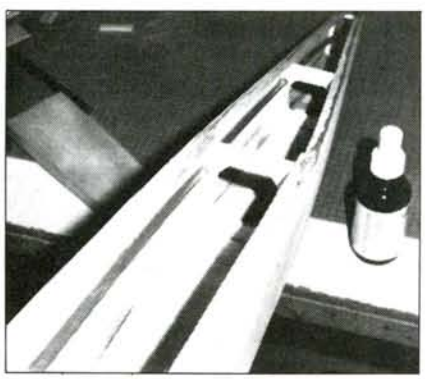
Following the plan, taper the tail post and the triangle stock as necessary when bringing the fuselage sides together.

Our next mod is the preparation of the bulkheads to fit the fuselage with the triangle stock. Bulkheads F4-1, F4-3 and F4-4 must have triangular notches cut out of their bottom corners. Bulkhead F4-5 must be cut top and bottom for the triangle stock. Glue in all bulkheads according to the instructions, but don't install the tow-hook blocks according to the instructions.

Next, plan the servo positions and drill holes for Sullivan* pushrod outer sheathing in the bulkheads and rear of the fuselage. The kit supplies wooden pushrods, but I'm going to use the plastic type to leave enough room for spoiler installation.

The supplied 3/16-inch balsa sheet for the front of the fuselage bottom is glued on as instructed. The bottom rear cross-brace must then be tapered to fit with triangle stock. The fuselage end cap is then glued in place. (Don't sand it to the rounded cross section shown on the plans.) According to the instructions, the 3/32-inch fuselage planking should be put on in one piece with the grain running lengthwise. However, I'm going to cut it and put it on

(Continued on page 82)



This shot shows the installation of the Sullivan pushrods. These are used to keep the center of the fuselage clear for spoiler installation later.

HOBBY SHACK

EZ SERIES FLOATS

by RICH URAVITCH

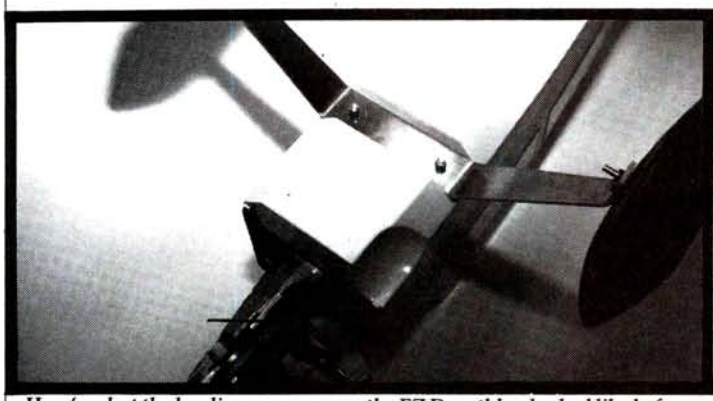
BY NOW, I'm sure that most of you have either heard of or have had direct experience with the Hobby Shack* line of "EZ" products. Until recently, this line consisted of a variety of high quality, attractive, ARF (almost ready to fly) airplanes ranging from the simpler box-type trainers through sport fliers right up to the warbirds like the P-51 and FW-190. A full-blown amphibian, the Mermaid, (reviewed by Chris Chianelli elsewhere in this issue) is available to satisfy the needs of the modeling aquanauts among us.

From the beginning, the EZ line was very well received, due mostly to its easy assembly and high level of pre-finishing, which enables purchasers to get airborne with a good-looking airplane in minimal time. All the EZs share the same concept in materials, which consist of a foam sheet bonded to a sub-structure—usually light ply or

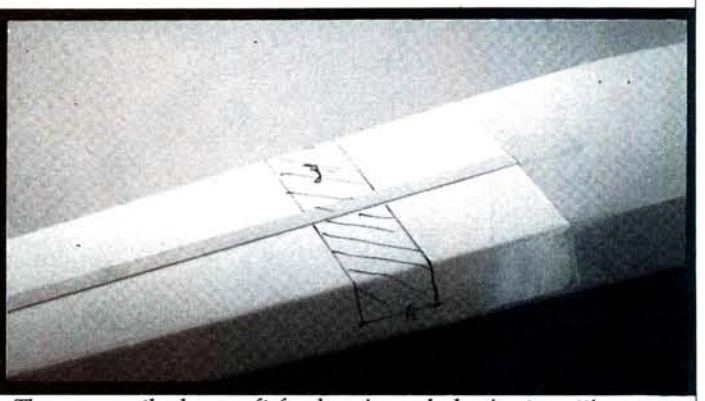
Right: *The Chianelli/Uravitch aquanauts prepping the Double EZ seaplane for its maiden voyage/flight.*
Above: *The Decathlon gets on the step quickly and the well-designed floats displace the water efficiently.*

Photos by Steve Pond and Rich Uravitch.

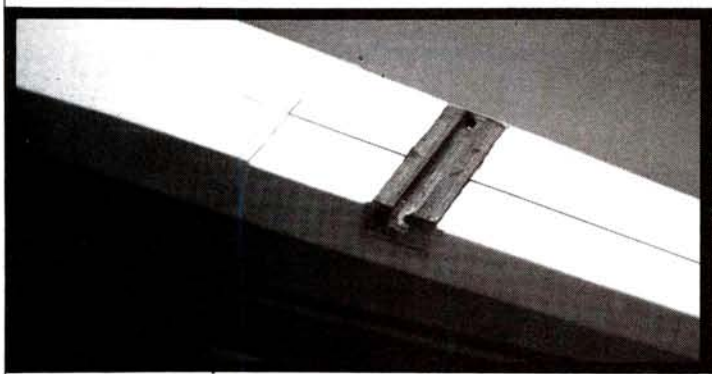
A NATURAL EXTENSION OF EZ TECHNOLOGY, COMPLETE KIT CONCEPT



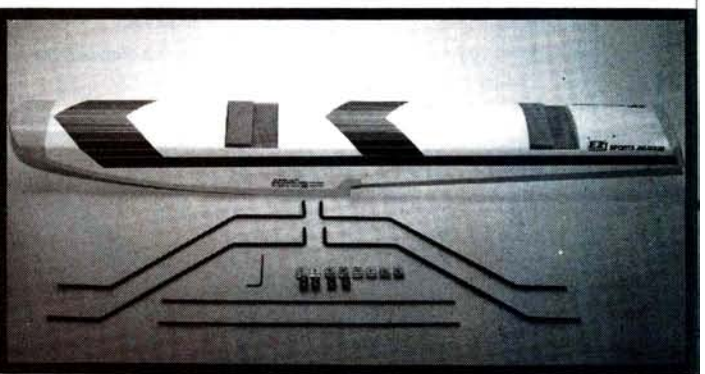
Here's what the landing gear area on the EZ Decathlon looked like before we started the float installation. The objective was to be able to convert back to this configuration.



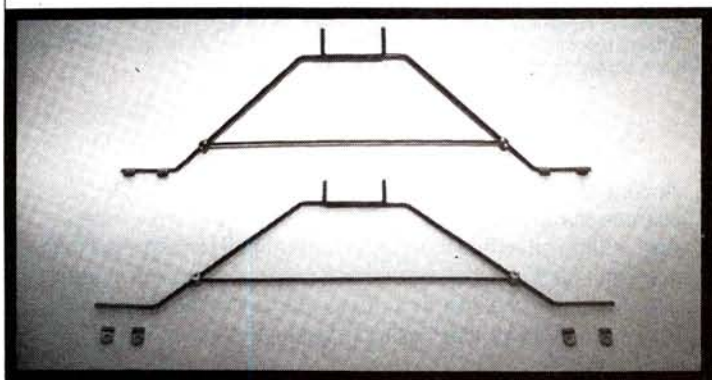
The area on the lower aft fuselage is marked prior to cutting away material to receive aft mount block.



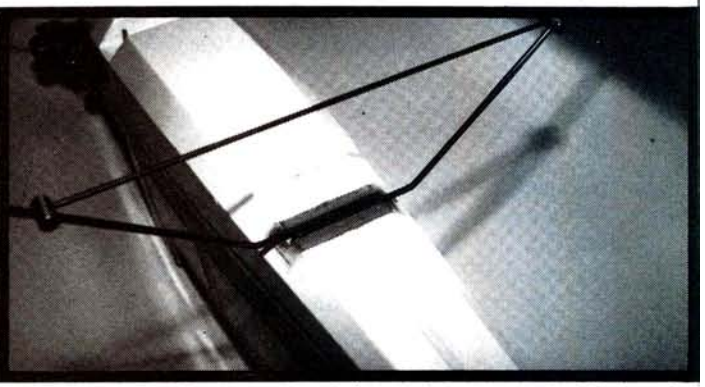
The aft mount block after shaping and fitting. Epoxied in place.



All the wire and metal components, plus one of the floats, as it comes out of the box. In the EZ tradition, attractive and maintainable.



Strut assembly is simplified by the use of brass joiner fittings that use setscrews to lock wires in place. Attachment tabs not yet soldered to axles on lower assembly.



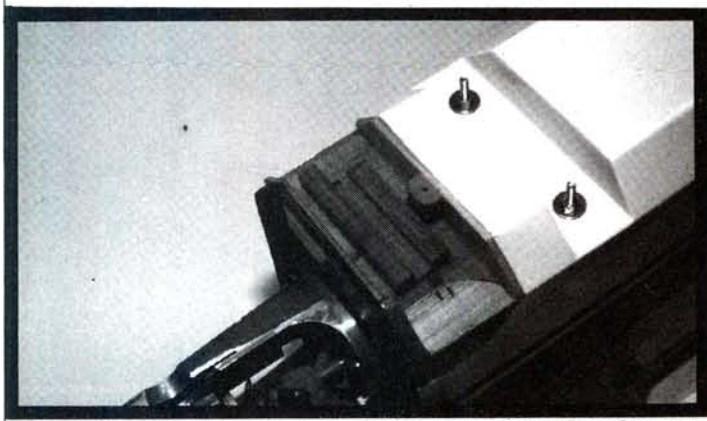
Rear strut assembly in position before painting mounting block and installing gear-strap retainers.

balsa. A pre-printed, pre-decorated layer of paper is laminated to this foam, and this paper is then sealed with a clear material, so that the finished product is able to withstand some abuse, remain fuel and oil free, retain its attractive finish and be easy to maintain. Enough of the lineage; let's talk about the floats.

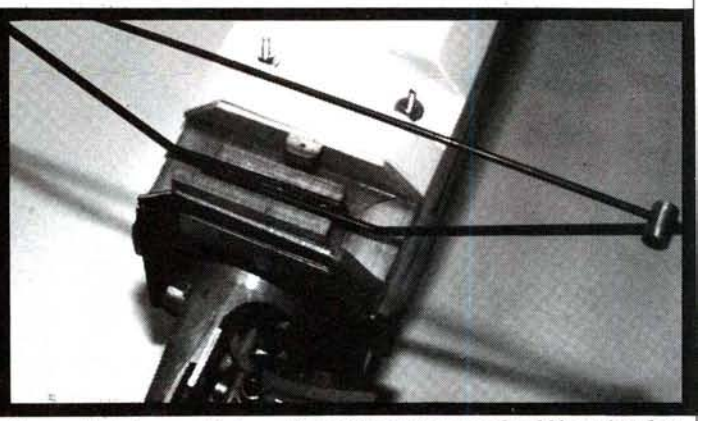
Hobby Shack probably recognized early on that there was a need for pre-finished floats of the EZ variety and has made them available in two sizes: 25 and 40. These correspond loosely to engine displacement sizes but more accurately to (naturally) the designators applied to the EZ airplanes. They are, however, designed to have universal application, and I see no reason why they couldn't be made to fit nearly any airplane falling within the engine-size guidelines.

One of the nice features of these kits is that they include everything you'll need for installation: all pre-bent wire, brass

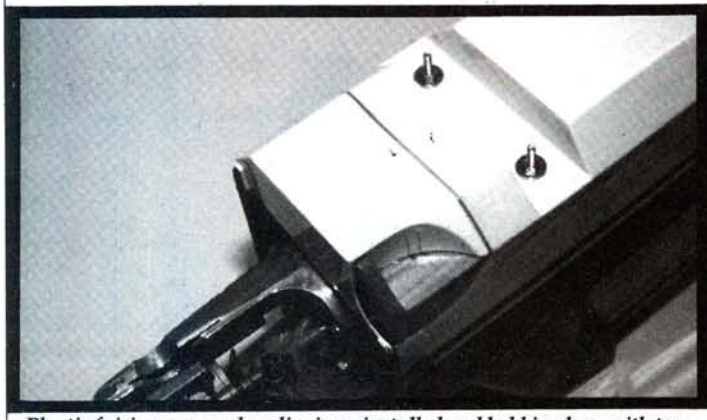
EZ SERIES FLOATS



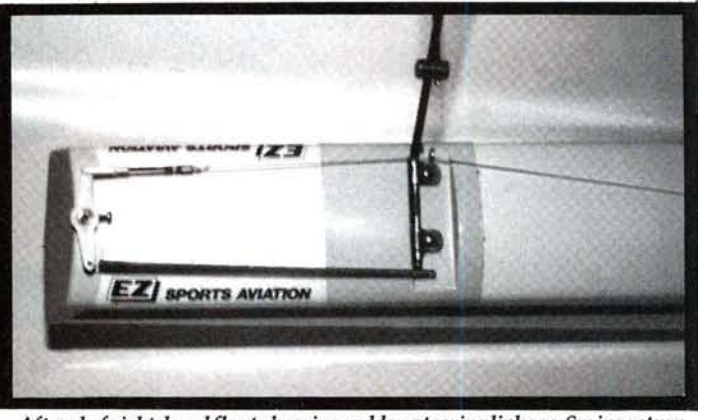
Forward mount area with plastic fairing removed. Hardwood mount block is epoxied to existing lite-ply structure. Trunnion blocks (not visible) are underneath to receive vertical leg of wire strut.



Forward strut assembly in position. This entire area should be painted or epoxied for waterproofing.



Plastic fairing removed earlier is re-installed and held in place with two screws. Concave muffler cutout in fuselage has been filled with balsa.



Aft end of right-hand float showing rudder-steering linkage. Spring return (lower) works fine. Nylon line was later connected directly to tailwheel horn, rather than turning it around as shown here.

joiner fittings, attachment hardware, water rudder and linkage, wood parts and epoxy. You shouldn't have to buy anything else. *My* kind of kit!

I chose to install the floats on the EZ Decathlon, which is really one of my favorites in the line, the others being the warbirds. The installation was slightly more complicated because of the scale fuselage contours of the Decathlon, which I chose to retain. It would have been a snap on the flat-bottomed fuselage of the typical sport ship.

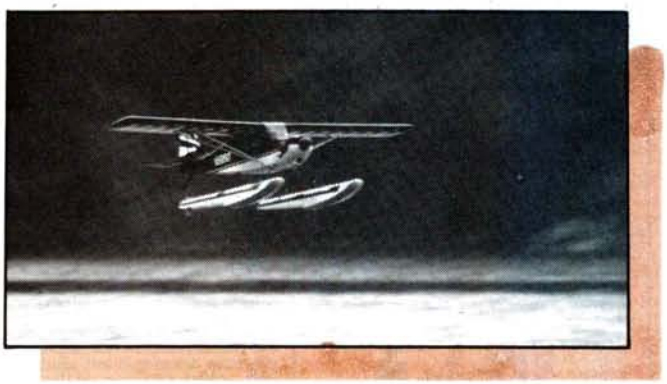
The build-up is adequately discussed in a large sheet of instructions that divide the assembly sequence into four major steps, each clearly illustrated. It took a couple of tries, but I eventually figured out the proper position for the brass holders that tie the struts and cross bracing together. These are great little devices, and they'll surely appeal to any modelers who hate wire-wrapping and soldering large-size music wire. Metal straps are used to attach the struts to the floats, and I elected to solder these to the axle portion of the struts. The instructions advise you to "Wrap with *vinyl tape* to prevent the strut pulling out while the engine is running." I interpreted this to mean that the tape was used as a retainer to prevent engine vibration from causing the axles to slide out of the attachment straps. Could be embarrassing to land with one or both of the floats askew!

After marking the proper locations on the fuselage, which were determined by positioning the float "step" directly under the CG, I discovered that there were few hard points to which I could make the connection. After some surgery, which included a hardwood transplant, it looked as though we had it made. A little filler, a coat of resin (to protect all the exposed wood) and a coat of white Superpoxy had the installation looking as if it was designed for the Decathlon. I should point out that I took the extra time with this conversion because I wanted to be able to remove the floats quickly and install the

stock landing gear without marring the attractive appearance of the airplane. The changeover now takes less than 10 minutes.

The rudder linkage is simple and uses a nylon thread connected to the rudder servo in conjunction with a spring-assisted return. Rather than running the thread through an aluminum tube to the servo as recommended, I connected the end of the thread to the tail-wheel steering arm after going through an eyelet "turnaround" mounted on the float. This seemed to work as well as the recommended installation. I further simplified things by eliminating this turnaround and went directly to the tail-wheel steering arm. This reduces thread length and the force required to actuate the rudder by eliminating the friction of both the tube and the eyelet. I'm not sure, but I think the rudder supplied for both sizes of float may be the same item. Mine appeared to be too small, and I confirmed the accuracy of this observation when we flew the Decathlon.

As some of you might recall, I'm still a novice at this float flying, so I'll admit to just a "skosh" of apprehension when flying time came. I had checked everything out: balance, linkages, waterproofing and anything else I could think of. It all looked good. The ready-to-fly airplane (minus fuel) weighed just over six pounds and sat in the water beautifully. I got excited just looking at it! We started the O.S., which seemed as eager as we were to get the show on the road. Taxiing was a little difficult at low speeds, probably because I



The Decathlon on a fly-by. Look at all that runway!

was expecting a faster response, but I aimed it into the slight breeze and advanced the throttle. As speed increased, so did the effectiveness of the water rudder (helped, no doubt, by the air rudder). The Decathlon was on the step quickly and tracking straight as an arrow. This was really *it!* The immediately noticeable flying difference was the skidding-in-the-turn phenomenon generally attributed to landplanes that have been converted to floatplanes. On the Decathlon, it's not serious, but it *is* obvious. The airframe, like many others, could probably benefit from the installation of an auxiliary sub-fin below the horizontal stabilizer.

After doing a number of touch-and-gos, I landed the Decathlon in one of the prettiest touchdowns I've *ever* made, including those on land. I know I was grinning from ear to ear; it's that feeling you get when everything goes as planned.

I'm really hooked on this seaplane thing, and it's really easy to get that way. The EZ floats work very well, and because they're solid foam cores, you needn't be concerned about leakage. As sold, they represent a very complete package, and one that I think bears looking into. Oh yeah, all that time I spent making my Decathlon land/water convertible? Wasted! It'll probably never see the runway again!

**Here is the address of the manufacturer featured in this article:*

Hobby Shack, 18480 Bandilier Circle, Fountain Valley, CA 92728. ■

The best retrieval system around. Justin, the son of our host, Russ Pribanic, was a great help and applied for a full-time job.

by JOHN SULLIVAN

ONE HUNDRED AND TEN registered pilots, 150 floatplanes, three days of great weather, a hard-working, dedicated club, and the blessings and encouragement of Lakeport's city fathers:

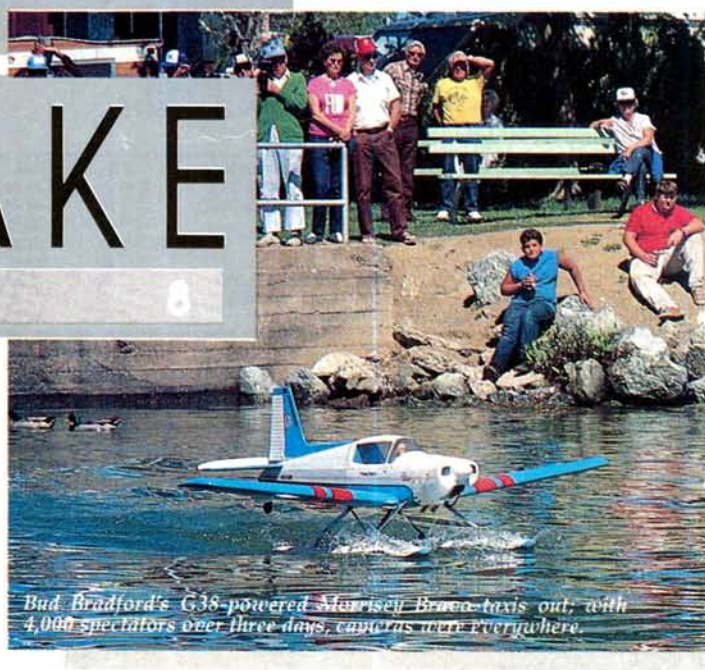
Three days of great weather, and 150 airplanes! Could be H_2O Heaven!

Lowell Chevront's Wedell-Williams racer on Gresham floats has an 86-inch span, JR radio, G62 engine, and weighs in at 26 pounds.

Ed Westwood launches Bill Curry's Y.S. .60-powered Larry Phillips Conquest on Sullivan floats. Great pattern / float combo.

Bob Stewart's Sig Skywalker on 51-inch stretched Sig floats has ST3000 power, Futaba radio, 104-inch span, ¼-scale, 24 pounds.

CLEARLAKE 1988



Bud Bradford's G38-powered Morrisey Bravo taxis out; with 4,000 spectators over three days, cameras were everywhere.

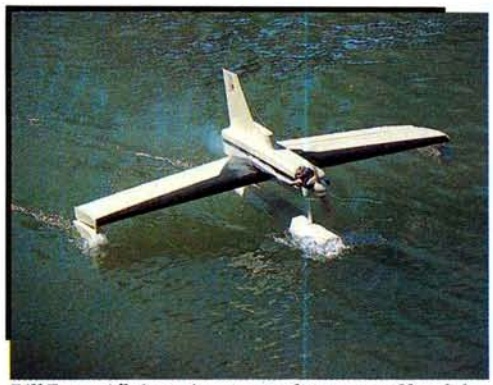
Put all this together and you come up with the Clearlake Modeler's 1988 version of float-flying hysteria! It certainly doesn't hurt, either, to hold a meet like this in one of California's friendliest resort towns, on the shores of that state's largest natural lake. Coincidentally, the City of Lakeport held it's centennial opener the same weekend as the meet, and over 4,000 people stopped to watch one of model aviation's greatest shows. The kids went swimming; some soaked up sun on the benches; and anyone who was interested got a close look at some of the best flying models. I thank Mayor Arlin Pischke, his council and staff for boosting our sport that weekend. In just a few years, the Clearlake meet has grown from an intimate meet of a dozen or so planes to what is probably the largest gathering of model floatplanes in the world, and none of this could have happened without their support.

Friday, May 11—the first day of the meet—brought clear skies, temperatures in the 60s and a fairly

strong offshore wind that kept the lake smooth, but caused a lot of turbulence as it spilled over the trees along the shore. In the afternoon, the wind shifted and brought chop and swells. Quite a few hardy souls—flying both big and small models—gave it a try, and some harmless spills resulted, but Friday was really for checking in, meeting old friends and looking over the early arrivals. By midafternoon, the campsites were packed, and modelers who didn't make reservations were driving 20 miles to neighboring towns for motel rooms. Everybody quit for the day with a "we'll-show-'em-tomorrow" attitude.

And the weather cooperated. Saturday dawned clear, sunny and calm. There was a wisp of a wind, and the lake was a giant rippled mirror. At a meet like this, it's always a blast just to be in the pits in the morning. The pace is hectic and the anticipation is so high you can feel it in the air. There was a pilots' meeting first thing in the morning, and over 100 transmitters were spread out on tables in the impound area. Floatplanes were everywhere, pilots were trying to decide whether to keep looking or start flying, and half a dozen planes at a time were in the air right from the start.

Rich Irwin's 1/3-scale Cub on custom Sullivan floats. Jimmy Allen holds. Siegelkoff's Walrus in the background at the 1/4-scale ramp site.



Bill Evans' flying wings were also seen at Clearlake. The owner/builder of this one is unknown, but it used ST3000 for power. It lost its tip floats on takeoff.

Paul Weston's latest .90-powered amphibian "Seawind" was the fastest ship at the meet—triple lomcevaks!

Dan Avilla's "Dragon Lady" on Sullivan floats had a 65-inch span, weighed 11½ pounds with an O.S. 120 Surpass. Smooth aerobatic performer.

John Gaine's 72-inch Leaky Tiki Twin uses Futaba radio and twin K&B 45s and weighs 10 pounds. Twenty-year-old design equal to anything available today. Spectacular performance!

There are two notable aspects of this year's meet: one was the incredible variety of floatplanes present; and the other is that nearly half of the planes were giant scale. If you wanted to look at an Evan's flying wing on a pair of floats or on a pylon setup, you had three to pick from. There were five PBYs, powered with everything from the 2-stroke 40s to 1.20 4-strokes. I saw a Grumman Goose, a Douglas World Cruiser, a Cub, a Super Cub and a Sopwith Pup—all in 1/3 scale. There were pattern ships on floats, Deltas*, swept-wing speedsters, old-timers, biplanes (including a Supermarine Walrus), trainers, scratch-built prototypes, Decathlons, ARFs, Seamasters and what seemed like enough Cubs to stretch from San Francisco to L.A.

If I had to pick the plane that was given the most attention, I'd choose Paul Weston's latest scratch-built, modified Delta—the Sea Era. This plane just flat-out smoked, and every time Paul put that 90-powered devil in the water he had everybody's attention. The entire fuselage is planked with tapered strips that have been glassed to mold-quality finish, and every pushrod exit, servo mount, seam and hinge is executed to perfection. I saw a number of people look at it and walk away, shaking their heads.

To provide more flying stations for a meet of this size, a Pacific

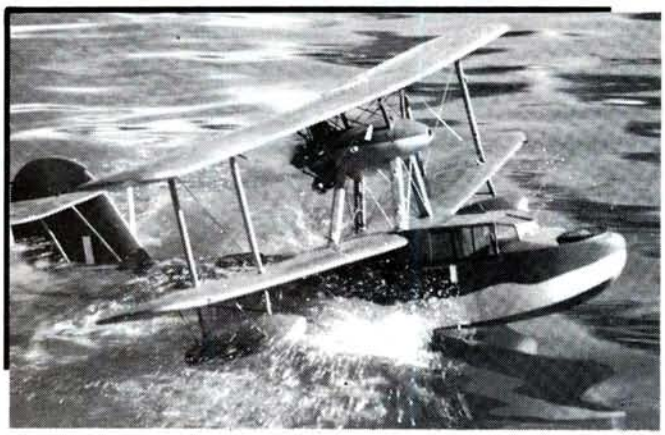
CLEARLAKE 1988

Left: *Ed Westwood's .40-powered Light 'N Up scratch-built was very docile* and *aerobatic. Excellent close-in performer.* **Below:** *Danny and Gary Stanton launching Ken Willard's Seamaster 120. Ace plans a kit for 1989.*

Plan separation layout had been established. The system worked well until Saturday afternoon, when close to a dozen planes were hit and went in. I'm reluctant to comment on the layout, because I know as little about third-order intermodulation as I do brain surgery. However, I do feel that many of these problems could be avoided in the future by eliminating a few flying stations and setting up a ready line, by frequency, in the pits. It's just a suggestion, but I think that if a pilot could determine his upcoming call by seeing a "ready" flag staked near his plane in the pits, he could prep his plane before being called, put in a flight in a shorter time than is now allowed, and still fly as many flights as he does under the current system. Still, at a meet of this magnitude, there are logistical problems that will never be dealt with completely to everyone's satisfaction. For example: On Saturday afternoon there were 137 transmitters in the impound area and 70 of those transmitters were on channels 48, 50, and 52! Bring extra crystals! Saturday was such fun that the five o'clock call was as welcome as a tenth-round bell.

While everyone else straggled home to freshen up, the Clearlake Modelers set up the park for a delicious meal provided by the Scotts Valley Grange members. After dinner, Ken Runstrand was presented with a trophy made of the buoy he had taxied into and snapped off last year. Last year, Ken was jokingly arrested for breaking the buoy, so *next* year he plans to come to the meet incognito. That way, if the Clearlake Club keeps making a broken-buoy trophy out of this mangled piece of ABS, they won't know who to give it to.

Sunday morning again brought excellent weather, and new planes continued to arrive. Some of the best flights of the meet were put in on Sunday because of the relaxed nature of this third day. Bud Bradford's smoke-equipped Morrisey Bravo made one beautiful pass after another, each ending in a long climb and a wing-over when all you could see was the smoke. Bob Sieglekoff fired up the 5-cylinder Saito* Radial on his Supermarine Walrus and made a takeoff attempt in front of what seemed like 100 video cameras. A situation like that *has* to shake up the coolest of the cool. The run was aborted when the Walrus bounced at high speed and lost a tip float. Bob said he probably added too much nose weight after a previous test flight. Other impressive flights were made by Lowell Chevron, with his very impressive Wedell-Williams Racer, Dan Avilla, with a smooth and aerobatic World Engines* Dragon Lady, Bob Stewart's immaculate Sig* Skywalker and Bill Curry, flying a striking, orange-and-black Phillips Conquest.



Bob Siegelkoff's Supermarine Walrus with Saito 5-cylinder power.

Balsa U.S.A. Taube. Beautiful floater on water and in the air. Owner unknown.

At noon on Sunday, the Clearlake Modelers held a raffle for a host of big-ticket prizes that included planes and engines and a drawing for a pile of manufacturers' donations. Bill Gresham,

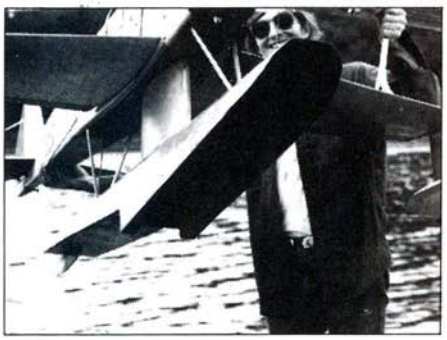
(Continued on page 82)

Floating Around

by JOHN SULLIVAN

Dalobipe at 2/3 throttle and climbing on step. Note slight up elevator.

NEARLY EVERY MODELER has a mental image of a pylon floatplane taking off. Mine comes from seeing a mid-40s Pathe Newsreel in a high school history class. With the announcer's sonorous voice booming over an inspiring Sousa March, I watched an OS2U Kingfisher smash through heavy seas, rise majestically into the air and disappear over the Pacific. Lately, with the increasing popularity of float flying, many of us are trying to revive that memory, and that's what this month's "Floating Around" is all about: pylon float design and flying.

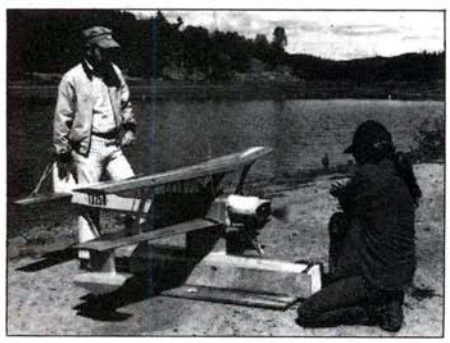


Mike Johnson's smile through the Dalobipe's rigging while holding 27 pounds of biplane at arms length. See text for details on tunnel-hull float design.

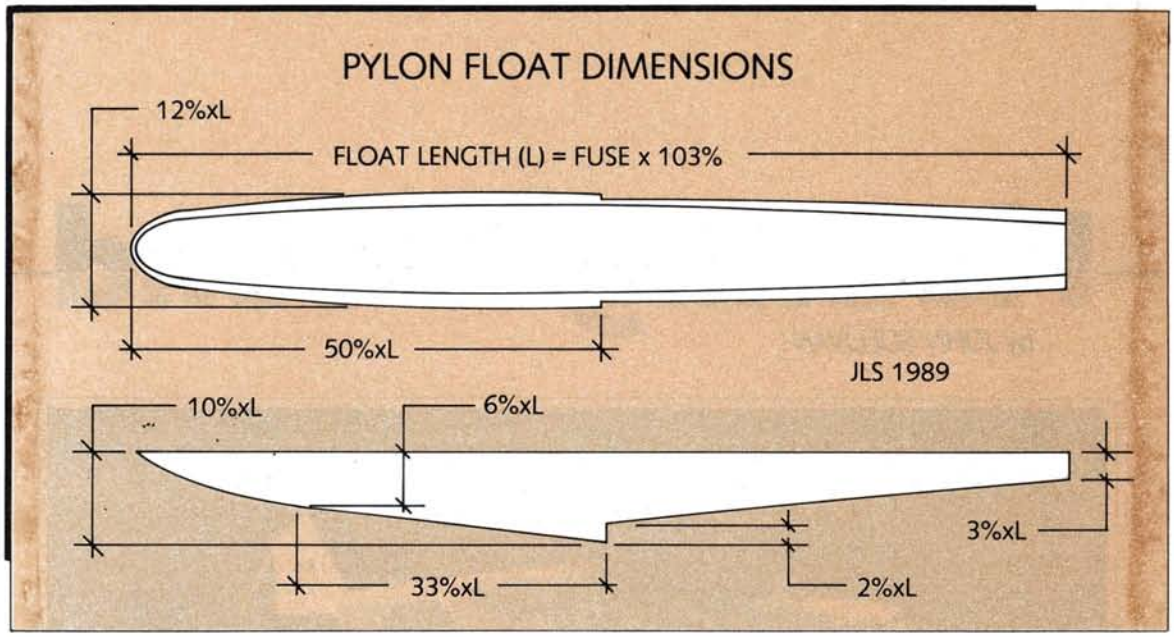
First, I'll explain the presence of the before and after pictures of a normally shod floatplane in this month's gallery. It's a glass-and-foam 96-inch Hanno Pretner Dalotel, which was built and flown (once) by Bill Curry, one of our local modelers. In that one flight we all learned an important lesson: If you take a 17½-pound aerobatic plane with a swept-knife leading edge and tapered wing, add 3½ pounds of floats and gear and try to fly it, it'll snap twice coming over the top of a loop and hit the water like a U.P.S. van falling off a bridge.

Bill was somewhat distraught after that first "landing," and he invited us to his house to watch him *burn* the Dalotel on his front lawn! Being of a more conservative nature, I intervened and conned Bill into giving the remains to Mike Johnson. The rest of the photos illustrate Mike's solution to the problem; he calls it the Dalobipe.

In its current configuration, the Dalobipe has an extra 1,000 square inches and rides on a single pylon float that's 60 inches long with two 14-inch tip floats. It was necessary to convert the plane to a pylon setup, because Bill Curry kept the original floats for another project, and because Mike Johnson likes to make life interesting. Mike joined the two existing plug-in wing panels to trap a T6 aluminum center-chord joiner that drops down and wraps the fuselage just ahead of the cockpit. The epoxy-glassed bottom wing was hot-wired from polystyrene and then sliced to accept two ⅛-inch plywood spars and balsa blocking in the tip-float area. Mike upgraded the Dalotel's original



Mike Johnson flips Zenoah G62 while Fred Constantine holds. Note plywood support stand.



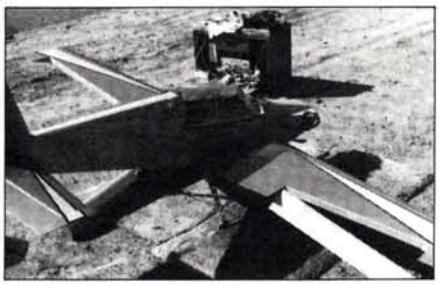
ST2500 powerplant to a Zenoah G62 and moved the combined wing's center of gravity (CG) forward by 2½ inches to accommodate the increased nose weight. The 2½ inches was just a guess, but Mike came so close he only had to add 3 ounces to the nose to make the Dalobipe balance.

At this point, Mike brought the Dalobipe into the Sullivan skunk works to design and build the pylon float setup, which was a new venture for both of us. Along with the bare-bellied Dalobipe, Mike brought over a Rand McNally Encyclopedia of Military Aircraft from 1914 to 1980. In it we found seven three-views of pylon-mounted military floatplanes, from Nakajima E8Ns to a Curtiss SO3C Seamew. By measuring various components, we were able to come up with these relationships:

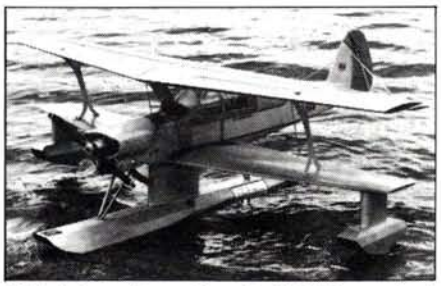
- The float measurement (bow to stern) averaged out at 103 percent of the fuselage length (prop washer to rudder hinge line).
- The tip float length was an average of 25 percent of the pylon float length.
- The distance from the prop to the bow of the float was an average of 20 percent of the main float length.
- The span of the tip floats averaged 115 percent of the main float length.
- The step of the main pylon float was always positioned at, or slightly behind, the plane's CG, and the stern of the tip float trailed behind *that* position by one-third of the tip float's length.

Armed with the above information, Mike and I laid out a big sheet of paper, traced around the Dalobipe's fuselage, and drew in the float components. Along the way, I think we broke nearly all the above rules, but we still came up with a successful project, so it's important to explain our reasoning.

Bill Curry's Dalotel sets off on ill-fated flight. Float deck parallels fuselage datum line. Float cutaway allows rotation.



Curry's Dalotel after 60mph slam-dunk. Not good, but the plane would have been unrecognizable had it hit the ground.



Mike Johnson's creation, the Dalobipe, rests at shore. Note "V" down struts and glassed foam pylons. Conversion reduced wing loading by 34 percent.

To begin with, the Dalobipe's fuselage is 66 inches long and we used a 60-inch pylon float instead of the 68 inches called for. We did that because the longest block of scrap foam we had measured 60 inches. However, we also knew we were OK, because the 60-inch float calculated out as supporting 30 pounds with an 80 percent buoyancy reserve (.016 pounds per cubic inch equals bouyancy), and because the bow of the 60-inch float came out 11 inches ahead of the prop, which was close to what was called for.

We reduced the tip float length from 16½ inches to 14 inches and made the bottoms disproportionally wide. In many of the pylon float setups that Mike and I have seen, the tip float was either not bulky enough to support the weight, or too narrow, and this allowed the float to slice under the surface. I admit the tip float we came up with looks like a cross between a football and a casket, but it does the job. As shown, the Dalobipe's tip floats have a 5-inch square section (35 percent of the length) and a raked chine with a 13-degree angle of attack.

We slightly missed the spread of the tip floats, too. They should be further out towards the wing tip, but we reasoned that the extreme trailing position we wound up with (because of the Dalobipe's swept wing) would more than compenstate, and it worked! So, except for changing four of the five average

(Continued on page 107)

E·Z

MERMAID

A flying boat in the ranks of the EZ Armada

by CHRIS CHIANELLI

IN THE PAST FEW YEARS, the EZ line of ARFs has become a household word among modelers. The line has become so diverse, that it was only a matter of time before a flying boat had the EZ hallmark stamped on its box. The Mermaid, manufactured by Sport Aviation of Japan and distributed by Hobby Shack*, is a .45 to .60 2-stroke or a .60 to .90 4-stroke-size flying boat with a 63-inch wing span and 612 square inches of wing area.

CONSTRUCTION: From a construction and design standpoint, the Mermaid is no different than any other EZ. The fuselage is built up around an inner balsa and plywood frame over which the triple-layered skin is formed and bonded. The bottom of the fuse/hull is ABS plastic, and it was at this joint, where the ABS bottom and the triple core meet, that it leaked. This was easily fixed by running a bead of medium-thick CA glue along all the edges of the ABS. There is also a cap of ABS at the tail post, where the fuse sides meet at the rear of the fuse under the stab. I had to seal the tail post by coating the inside of the cap with silicone and then gluing it on. The rudder's lower-most hinge is inserted at this point and it's always submerged while at rest, so there's a potential for seepage if it's not properly sealed. Luckily, a friend, who has a Mermaid, forewarned me about the leakage problems and, sure enough, when I put my not-yet-waterproofed fuse in the pool, it also leaked in more than one spot.

Probably the most noticeable change in the Mermaid is the replacement of the usual pushrods with EZ's own nyrod-type linkage. The exit point of an inner/outer tube setup is much more waterproof than the open slots needed for pushrod exits.

Also typical of EZ is the wing structure, which has balsa ribs covered with triple-laminate skin. The big difference is that the plywood center rib that is sandwiched in between the wing halves holds the motor pylon in place. This center piece has a spine that protrudes on the top of the wing and has three holes drilled in it to support the motor pylon. The pre-built plywood motor pylon is fastened to this spine with two pre-drilled aluminum plates (see photo) at the center and supported laterally with two forward legs, that are held down by the forward wing hold-down bolts.

It's also a very good idea to waterproof the wing tips. On a flying boat, such as the Mermaid, a wing tip can go under while taxiing crosswind. Even if this is only momentary, water can get

SPECIFICATIONS

Type: *Seaplane (flying boat)*
Span: *63 inches*
Weight: *7 pounds, 3 ounces*
Area: *612 square inches*
Wing Load: *27 ounces per square foot*
Power Required: *.40-.45 2-stroke, .60-.90 4-stroke*
Number of Channels Required: *4*
Sug. Retail Price: *$289.99*
Features: *Pre-built wing fuse and tail surfaces with finish. All hardware included with built motor pylon.*

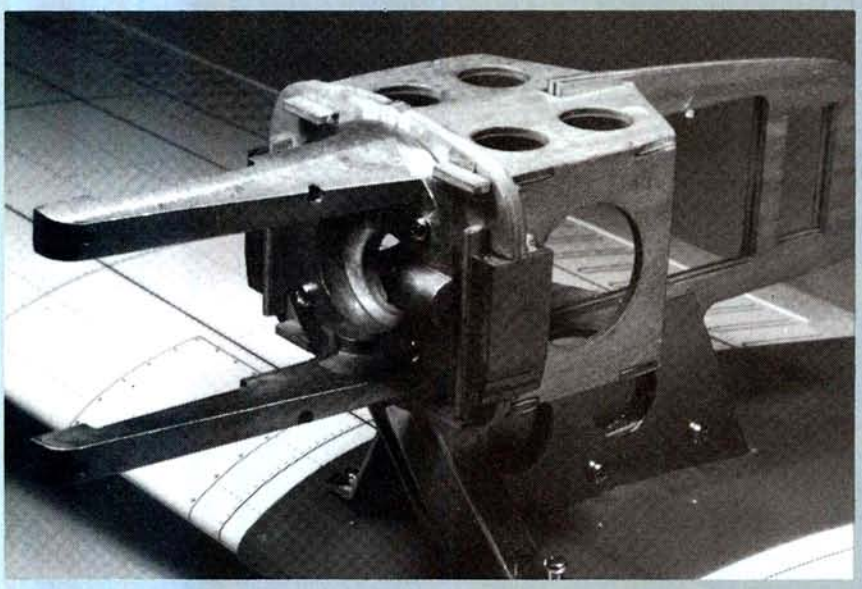
Photo by Steve Pond.

into the openings of the tip rib, run down the inside of the wing and empty out through the aileron servo hole right onto the radio: Not good! To prevent this from happening, remove the ABS tip, glue little pieces of balsa sheet over the holes, give the entire tip rib a sealing coat of CA, and re-install the ABS tip. (See photos.)

Wet wing tips bring me to the biggest design flaw of the Mermaid, and luckily, the easiest to fix. According to the instructions and locator marks on the wings, the tip floats are too far inboard. In a precarious crosswind taxi, you can give the plane the mechanical advantage by moving the tip floats outboard seven to eight inches. The float is fastened with double-sided tape, but don't place the tip floats at the pre-marked outline. Put them at least seven inches out from the mark. At first, I thought I'd have to increase the height of the floats because of the dihedral, but it was unnecessary because the difference was so small. The lateral stability of the Mermaid during a taxi was now excellent.

The throttle servo is also contained in the pylon, necessitating a second servo extension to connect the throttle servo to the receiver. My well broken-in Saito* .80 has always been my choice for seaplanes that require this size engine. The power is good and, surprisingly, so is

Below: *Except for some spray coming over the bow, the Mermaid displayed very good water handling both on and off step.*
Right: *Although pitch-sensitive, the Mermaid's wing never hinted at tip stalling even on slow fly-bys for the camera.*



The engine pod is pre-assembled and all the supporting hardware is pre-cut, bent and drilled.

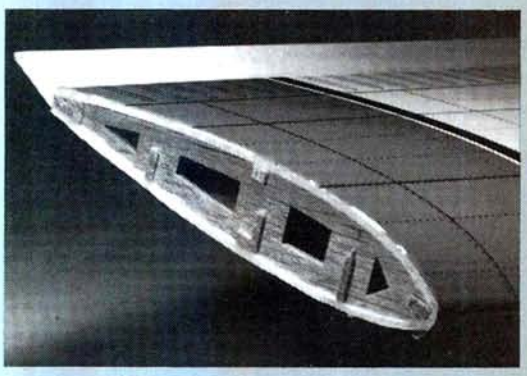
the idle. I have two Saitos and both have highly reliable idles. I assume this is characteristic of not only the .80, but also the .65, since I was told that the .80 is a bored-out .65. When I mounted the motor as per instructions, the included spinner (nice as it was) stuck out too far for my tastes. So I used the Graupner three-blade 11-7 prop, available from Hobby Lobby*, and the AMA prop-nut look.

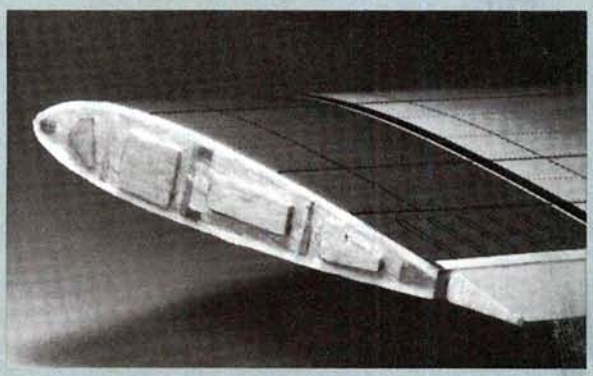
The tail feathers are sheet balsa, and again, the laminate is neatly stretched around the surfaces. For clearance purposes, the horizontal stab is elevated off the top of the fuse onto the fin. This arrangement looks fragile but, in fact, is internally reinforced with ply doublers and triangle stock, and it goes together very well.

The all-up weight of the Mermaid should have been 6¾ pounds. Unfortunately, this is the first EZ I've ever built that came out tail-heavy. The weight of the 4-stroke doesn't help, because it's not far enough forward of the CG. Even with the battery as far forward as possible, it was still necessary to add eight ounces of nose weight, bringing the total to slightly over seven pounds. The entire model was built with CA, so no one can say I used too much heavy epoxy in the tail.

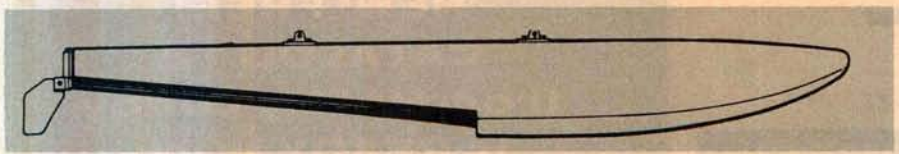
FLYING: I flew the Mermaid in a steady breeze and in calm conditions and, in each case, the plane's performance on the water was excellent. In breezy conditions, the model taxied downwind and came about every time without even a hint of sinking a wing tip while in the crosswind position. But the real test came

(Continued on page 87)





Left: *These holes in the tip rib will allow water to enter the wing if a strong crosswind dunks a wing tip.*
Right: *With the plastic wing tip removed, these holes were covered with scrap balsa, given a sealing coat of CA, and the tips were re-installed.*

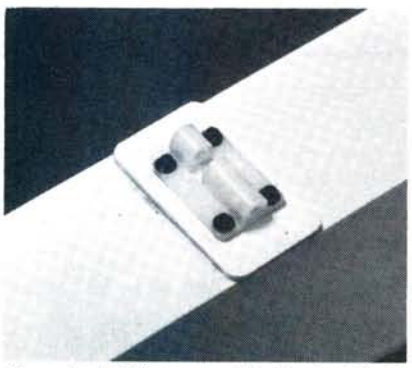


CARL GOLDBERG MODELS SUPER FLOATS

Built-up construction, universal application should make these very popular.

by RICH URAVITCH

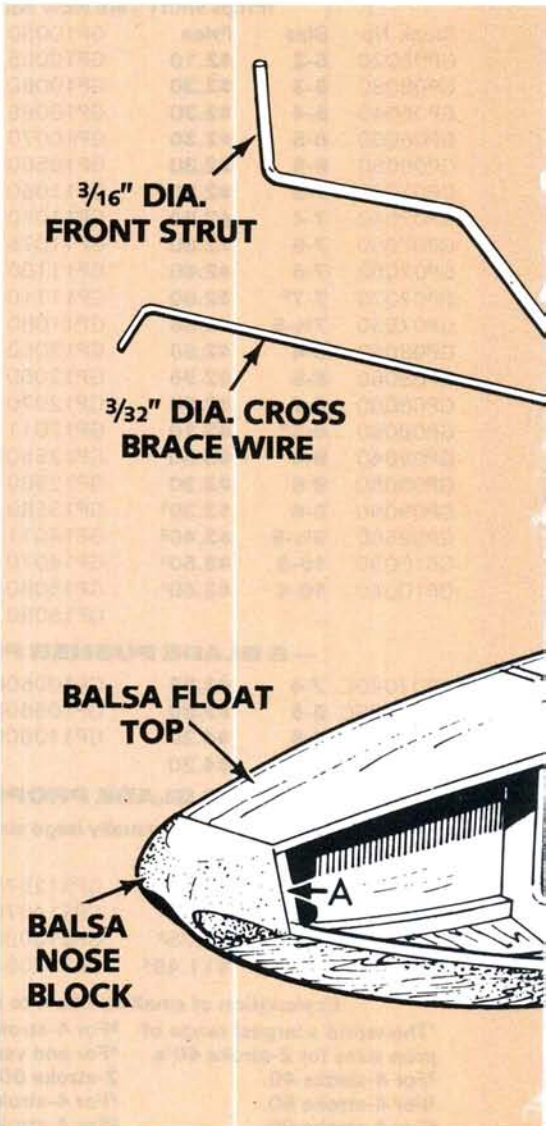
THOSE OF YOU who have been in the hobby for more than a month have, no doubt, heard of Carl Goldberg Models*. Others who have been in the hobby longer than I've been around have also been hearing about Carl Goldberg Models since they began modeling. That, my friends, spans a considerable length of time anyway you cut it. I suspect that more modelers learned to fly with CGM airplanes than with any other type, the most prominent being the Senior Falcon and its smaller brother, the Falcon 56. Add to these the more contemporary Eagle series, and you're looking at sport trainers that span decades. About three years ago, CGM recognized the need for an easy-to-build, sport scale airplane that might serve double-duty as a trainer. After a nanosecond's worth of headscratching, the boards were cleared and, a while later, the Anniversary Cub was unveiled. This J-3 was indeed sporty scale and was immediately plucking at the heartstrings of modelers everywhere. The popularity of the Cub was unparalleled; it was a Goldberg kit, and everyone knew that meant only good things. The construction of this kit, however, was a bit different; it used light ply almost exclusively in the fuselage, and balsa in most other places. It was easy to build, looked good, but most important, it flew well. I'm sure that Goldberg sold a lot of them. So what does one do to make an already popular kit even more popular? Easy—extend its versatility and retain the proven material/technique combination in an accessory package. Perhaps in another brainstorming session, while Chicago was being besieged by torrential rains, one of the CGM team looked out the window, thought a moment and said: "Floats, yeah, that's the ticket, floats!!" So here they are gang, not just floats but…"SUPERFLOATS"!

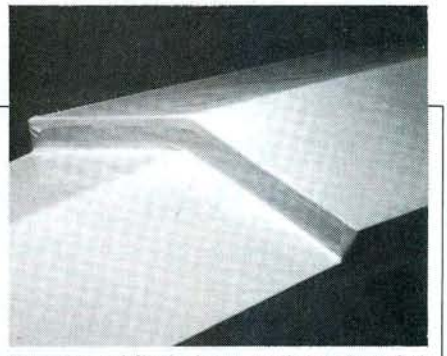


Gear-strut fittings consist of nylon block (nose-gear steering type) attached to laminated ply hardpoint. All hardware is provided.

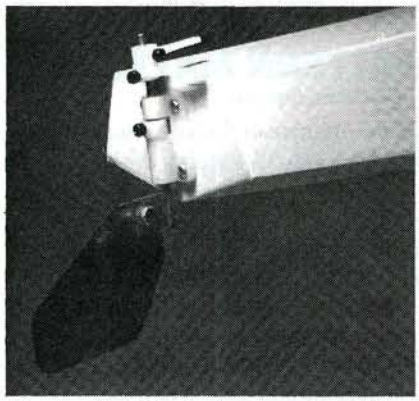
This kit is probably among the most complete you're going to find. The large box is jam-packed with balsa, ply, hardware and paper. The 28-page construction book includes a thorough building sequence with over 90 photographs and diagrams! Most full-blown, complete airplane kits don't include this level of detailed instructions.

Assembly is very easy, especially if the recommended adhesives (e.g., Jet and Super Jet) are used. There's nothing difficult in the construction; the ply parts are substantial, and the balsa sturdy enough to be handled easily. The most tedious part of putting all of this together is the binding and soldering of all the





Step area of float shows moderate "notch." Vee shape with sharp edges enhances directional stability on water.



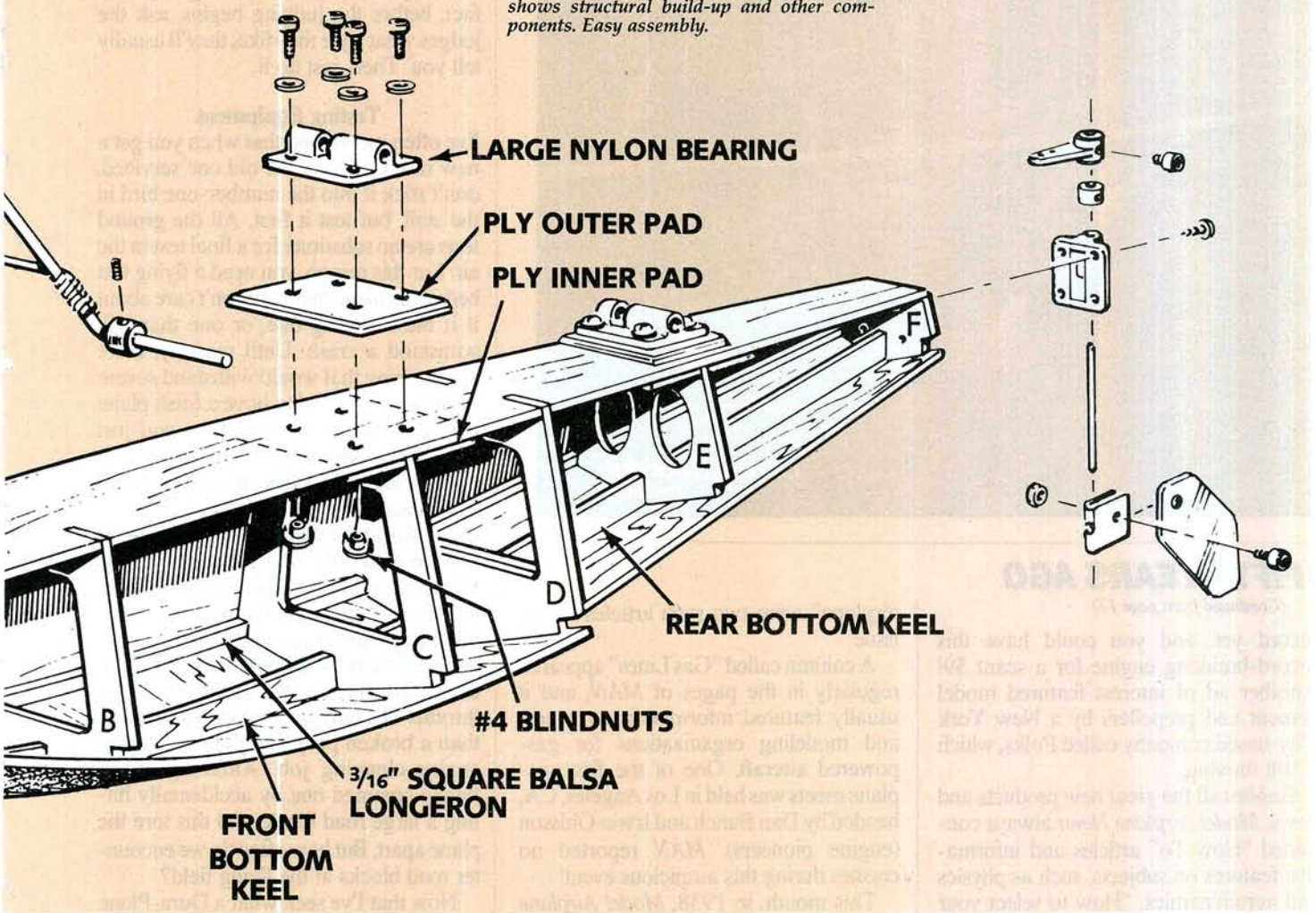
Stern end of float shows water-rudder installation detail common to both floats. Generous area provides great water handling.

music-wire struts and cross-bracing. In order to remain interchangeable with the wheel gear of the Cub, some of this is 3/16-inch wire and will require a considerable amount of heat to properly solder, i.e., torch-type heat! On the plus side is the fact that you'll not likely bend this gear under normal use. If you enjoy building the first float, this kit is great because you can do everything all over again on the second one, and it will probably take a lot less time to complete than the first. Total building time (including all soldering but not including the covering) was about five hours.

Covering is left to the builder's discretion and CGM naturally suggests their Ultra-cote film. I followed their suggestion and found it easy to use,

(Continued on page 112)

Exploded view of float assembly clearly shows structural build-up and other components. Easy assembly.



FIFTY YEARS AGO

(Continued from page 17)

record yet, and you could have this record-breaking engine for a scant $9! Another ad of interest featured model cement and propellers by a New York City-based company called Polks, which is still thriving.

Besides all the great new products and news, *Model Airplane News* always contained "How-To" articles and informative features on subjects, such as physics and aerodynamics. "How to select your wing sections" and "The physics of the airplane" were two such articles in this issue.

A column called "Gas Lines" appeared regularly in the pages of *MAN*, and it usually featured information on events and modeling organizations for gas-powered aircraft. One of the first seaplane meets was held in Los Angeles, CA, headed by Dan Bunch and Irwin Ohlsson (engine pioneers). *MAN* reported no crashes during this auspicious event!

This month, in 1938, *Model Airplane News* was celebrating its first decade of service to the modeler, and this year, we're celebrating its 59th year of publication—quite a feat for any magazine. Of course, next year we'll really whoop it up for our 60th, but now to celebrate our 59th, we feature some interesting covers that have appeared over the decades.

PATTERN MATTERS

(Continued from page 23)

and the maneuver looked much better. The judge may like seeing the maneuver at a distance, and may not realize that distance is often used to hide defects. In this case, you can bet I'm going to fly out there in the ozone, too!

Again, adapting to the style the judges want to see may help your score. Judges have a preconceived idea about how the maneuver should look. Their assessment of it depends on how closely your execution of the maneuver approaches the way *they* envision it. It pays to listen to what the judges say. When I approach the flight line with my bird ready to fly, I'm up there at least two pilots ahead of my flight, just so that I can catch any small talk about the judging. I hear it, I remember it, and then I fly it. Every little bit helps; try it. In fact, before the judging begins, ask the judges what style they like; they'll usually tell you. Then, just do it.

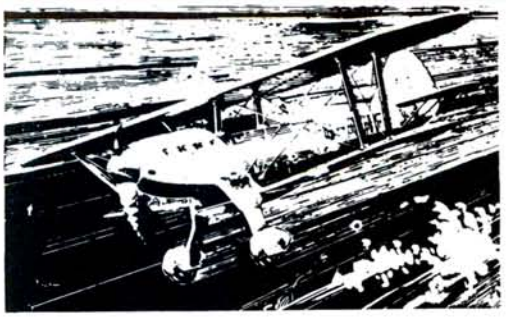
Testing Equipment

I've often mentioned that when you get a new radio, or have the old one serviced, don't stick it into the number-one bird in the stall, but test it first. All the ground tests are no substitute for a final test in the air. For this reason, you need a flying test bed: an airplane that you won't care about if it bites the big one, or one that will withstand a crash. Until recently, there was nothing that would withstand severe crashes, so you had to have a trash plane that you didn't care about, or you just didn't test equipment properly.

Enter the Dura-Plane from Duracraft*. This plane is a .21- to .40-size bird that can withstand a tremendous beating and survive with little, if any, damage. I was turned on to this bird by a video showing the Dura-Plane going through an incredible torture test that ranged from simple belly landings at full speed to 100-foot dives straight to the ground...at full throttle! The bird survived with little more than a broken prop and the need for an engine-cleaning job. Amazing! They finally creamed one by accidentally hitting a large road block, and this tore the plane apart. But how often do we encounter road blocks at the flying field?

Now that I've seen what a Dura-Plane

(Continued on page 82)



Golden Age of

by HAL "PAPPY" DeBOLT

Astro Hogs, including Ray's, at the Las Vegas Convention Center parking lot. Note Orbit reed transmitter.

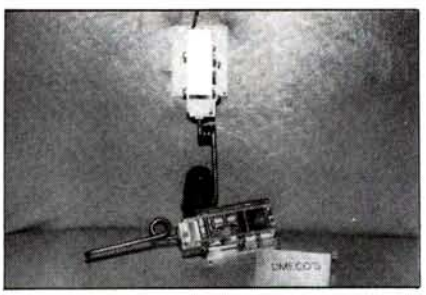
IT'S ALWAYS EXCITING to ponder the history of R/C; recently, a reader wondered about the origin of retractable landing gears, which are now so common. As well as planes and radios, innumerable R/C accessories have been developed (with just as many problems along the way), and their stories are interesting.

Those who experienced R/C development are very aware of the rewarding "high points" that always encouraged further efforts. One of *my* high points came when my wheels first retracted. Imagine a close fly-by, switching to retract as the plane reaches you, seeing the craft *leap ahead* as the wheels disappear, and then doing it repeatedly and realizing that getting rid of the wheels really *did* make a difference. There had been hope; now there was proof—such exhilaration! So if you haven't yet tried retracts, there's more R/C enjoyment just waiting for you! The realistic appearance of your plane as the wheels retract makes the effort worthwhile.

The name of the person who first used retracts is probably lost in time, but I know that many free-flighters found improvement with their use. Mine was a simple rubber-band gadget that pulled the wheel up and kept it there. The first U/C speed record was set with a retractable-gear model. This two-wheel gear was raised with an Austin pneumatic timer, and there was real excitement the first time *that* worked. I remember Keith Story's '50s pylon racer, which was so light that robust mechanics weren't needed; rubber bands were powerful enough to raise the lightweight gear. Rubber bands are so versatile and did so much work for us. Need more or less power? Just add or subtract a band!

Do you remember me mentioning that the Larks Club was in the forefront of early R/C? This Californian club generated many R/C pioneers, including Ray Downs, who had the benefit of an encouraging wife, and who is still active and dividing his time between R/C and full-scale home-builts. Would you believe a Wittman Tailwind as a modeler's logical choice?

When flying with Ray in the late '50s we were convinced of the value of retractable gears. Comparing the performance of his gearless Astro Hog to that of others immediately showed the advantage. Those with retractable gears were faster and maneuvered more cleanly.



Dmeco's retract gear units were the first commercial offering. Self-contained and electric-motor powered.

Ray spent more than six months developing the retract mechanism from scratch. In the photo, the bottom of the wing tells the story better than words can. See the "beauty marks"? (It helped to have a cute label to explain the dings on your model!) These were evidence of the trials and tribulations endured!

Ray was disappointed after reliability was achieved; the performance gain was detrimental in those times, because those were the days of reed systems, which didn't provide "trim." Ray says that as soon as the wheel drag was gone, the Astro wanted to climb steeply, and this upset the careful adjustments required for competition flying with reeds. With no trim available, his only alternative was to lock the wheels down, and in that mode, the wheel-well drag, plus the added

Susan Langlotz displays a L.W. Viscount to evaluate retract gear operation. The first retract gears in pattern placed 4th at '62 Nats.

Another Vanguard, originally by Hugh Dawson, Graham, NC. Powered by a Wen-Mac .049, it's still flown by Don May of Slidell, LA.

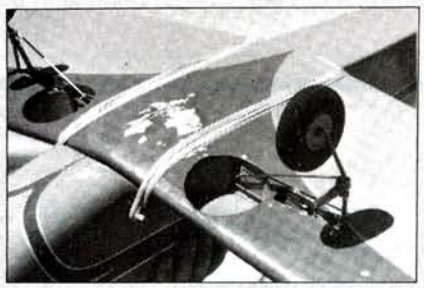
weight, made his Hog inferior to others. Fortunately for me, my effort came later, with proportional controls.

Ray's mechanics were typically simple. The gear legs were of the usual piano wire, hinged to fold inboard. To lock them down, a full-scale-style two-piece arm folded past center, and retraction was accomplished by a servo-operated "walking beam" at the center of the wing. From this lever, rods extended out to the gear legs. The rods were attached to opposite ends of the lever, and when the servo rotated the walking beam, the rods raised the wheels. Springs helped the weakly powered servo to offset the wheel weight. Cables from the walking beam would unlock the pivoted arms. The weight of the wheels, added to the servo power, was enough to lower them. I'm sure you can see why this system required infinite adjustments, and you'll understand Ray's "beauty marks!" Once again, a modeler's dreams and hopes were short-circuited by the limitations of early radio.

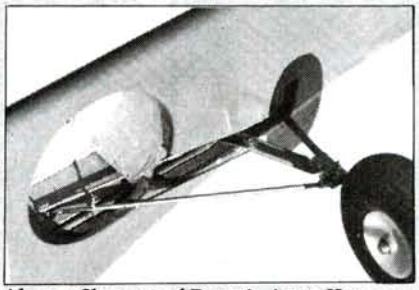
Dmeco marketed the first retracting landing gears in the early '60s, and this venture was a direct result of my having seen the performance gain demonstrated by others. These reliable gears didn't come easy; they required considerable development effort. The concept was mine, and the design and production was by Jack Roth's Tool and Die Company. At the time, Jack was an avid R/Cer and we were flying buddies as well as business associates.

The reason things happen is often complex. For example, the retract gear project wasn't started just to have collapsible gears (as some soon called them). At the time, we had our first proportional radios, and these were showing us just how much this infinite control could add to our contest performance. With this, it was soon obvious that the aircraft designed to get the most from reed systems wouldn't be the best for proportional flying. Jack and I gave this a lot of thought. I thought that with the ultimate control finally available, one could design a model to take full advantage of it—perhaps even the ultimate basic design for pattern flying. To me, this meant pulling out all the stops, using aerodynamics and taking no short cuts. Obviously, the ultimate would require a retractable landing gear, and this wasn't available. This project eventually consumed two years of our time, during which the retract gears and the airplane were formulated. The resulting combination was called the Interceptor, but its story can wait for another time.

To be successful, the Interceptor concept demanded equipment reliability. So, retract gear development was done with available designs—mostly with variations of the Dmeco Viscount kit.



Top: *Ray Down's '58 Astro Hog with homebrew retractable landing gear. Reed system servo-operated.*



Above: *Close-up of Down's Astro Hog gear. Note that it's wire-locked in the down position. Details in text.*

Jack quickly went to work on producing what he thought would be a viable unit. The concept considered the use of various types of power. They could be mechanical, operated by servos, pneumatic or hydraulic. Electric power was chosen as being compatible with an existing source—the radio battery. We also thought that each gear should be a self-contained unit like the engine. Just bolt the retract unit in and have all the necessities inside. The timely advent of a tiny low-drain motor of sufficient power made the electric version practical.

Obviously, a gear train would be needed to provide sufficient power. Can you believe that Jack's first version would hardly lift a wheel? More power was needed than one would have guessed! More gearing and the wheel would raise OK, so now it was time to fly it. A nose gear seemed the logical place to evaluate it, so the unit was installed on a Viscount, leaving the main gear fixed. Our flying field was rough, but used regularly. With great anticipation, we approached the first test run. The Viscount taxied about three feet and then the prop cut a swath through the grass and dirt, as the gear's housing had twisted like a pretzel! This was apparently something Jack had *least* expected! Back to the drawing board with lessons learned. This time, Jack went the Cadillac route; a much more sophisticated, robust design proved most successful.

The mechanism was housed in a special U-channel aluminum extrusion that included mounting flanges. The tiny 3V motor drove a precise gear train providing ample power to lift the heaviest wheels. A neat side effect was that the retraction occurred at a scale-like speed. Also incorporated was a rotary printed-circuit switch, which not only controlled the unit's indexing but could also start a second unit. Operation was simple: The engine servo trim (or an independent servo) was used to momentarily close a micro switch. This closing would start the first unit in the series, and once started, it would function by itself. Then the No. 1 unit would start No. 2 and, in turn, this one would start No. 3. So the retraction was also in a scale-like sequence. To lower the gears, the same action was used and the units responded in an opposite manner.

The output of the gear train was a cam

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PATTERN MATTERS

(Continued from page 74)

is made of, I can understand why it's so tough, and it makes the perfect test-bed plane. You can throw your radio in quickly and have it airborne within an hour of the completion of the airframe. A K&B 20 Sportster engine hauls it around placidly, and the plane *flies* (not too badly, either). Well, I had a radio that was highly suspect of a tendency to signal reflection, so that radio took the test. Sure enough, the radio glitched like the dickens, causing the Dura-Plane to roll over on its back at about 35 feet up. Down it went, producing that sinking feeling in my stomach and a muffled "whupff." At the crash site, I found the Dura-Plane, sitting on its wheels with only a broken prop and a dirty nose. Wow!

This isn't a bad way to test a plane, and a better way to test radios. I only lost the prop, and I saved the expensive bird that this radio could have been put in. For the cost of the Dura-Plane, that was a very fair tradeoff. If you think you should test your radio in a *real* situation, get a Dura-Plane before takeoff with the number-one bird. Till the next time: We're safely on the pipe and airborne.

**Here are the addresses of the companies mentioned in this article:*

Lanier R/C, Oakwood Rd., Oakwood, GA 30566.

Duracraft, 1007 Orchard Grove Dr., Royal Oak, MI 48067.

CLEARLAKE '88

(Continued from page 59)

who cuts beautifully proportioned foam-core floats, won a pair of *my* floats in the raffle, and George Graff, who recently built a Kittiwake for a *MAN* review, won *another* Kittiwake. I'll have to introduce these guys to each other at the next swap meet!

The meet broke up after the drawings, and the floatplanes were packed up for the long drive home. I hope every one of the Clearlake Modelers had a week to sleep after this bash. They had it all covered and worked tirelessly. They even had a crew available to take untried floatplanes downshore for test flying, away from the meet proper!

I've often thought of the benefits of a gathering like this. Everyone leaves with more than he or she came with: the families who stopped to watch, the modelers who put forth their best efforts, and the club members, who gave their utmost in hospitality. This meet was an exposition of the best the hobby has to offer: a fine display of building and flying ability, and a positive boost for float flying from the Clearlake Modelers who labored for months to pull it off. Let's do it again!

**Here are the addresses of the companies mentioned in this article:*

Delta Manufacturing, 27 Racecar Ct., Lorimar, IA 50149.

Saito, distributed by United Model Distributors, 301 Holbrook Dr., Wheeling, IL 60090.

World Engines, 8960 Rossash Ave., Cincinnati, OH 45236.

Sig Manufacturing, 401 S. Front St., Montezuma, IA 50171.

QUIET FLIGHT

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with the grain running across. This increases the overall strength of the fuselage quite a lot. Buy an Airtronics* adjustable tow hook and cut a piece of

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QUIET FLIGHT

(Continued from page 82)

1/16-inch plywood about 1 inch longer than the hook and the same width as the fuselage between cross sections B and C. Cut a second piece of 3/32-inch balsa sheet from the leftover fuselage planking, and make it the same size as the plywood. Push a pin through the fuselage bottom directly behind bulkhead F4-3, then turn the fuselage over and use this pin hole to position the tow-hook channel. Mark around the channel and cut a slot in the bottom sheeting to accept the tow-hook channel. Epoxy the plywood plate into the bottom of the fuselage, and glue the balsa sheet in directly on top of it. Mark and drill holes for the tow-hook channel and mount it with blind nuts.

Finish the rest of the fuselage construction as instructed, but leave off the hatch hold-down. The canopy will be held on by a rubber band between two cup hooks. Since the fuselage has triangle stock in the corners and cross-grain sheeting, it's possible to sand the corners to a nicely rounded contour.

Next month, I'll do the tail surfaces and outline wing modifications.

Two New Kits

In the near future, I'll review Graupner's new Electro UHU (available from Hobby Lobby*) and Sig's* new Riser 100. The UHU is a 66-inch span direct-drive electric sailplane. Graupner also makes a complete flight system for the UHU, and this includes the motor, Scimitar-blade folding prop, the spinner, the battery pack, and the motor on/off with BEC voltage regulator. The fuselage is made of an ABS-type plastic, and the wings and tail surfaces are conventional wooden structures.

The Riser 100 is a conventional, built-up, 3-channel model. The wing is polyhedral with spoilers. In a previous column, I said that I thought this was a D-tube wing, but now that I have the kit, I see that it's an open structure with turbulators. It looks like an excellent beginners' model. Watch for both reviews in a future issue of *MAN*.

Till next time...a full charge and good thermals!

**Here are the addresses of the companies mentioned in this article:*

Sailcraft Hobbies, 3058 Bernina Dr., Bennion, UT 84118.

Sullivan Products, 1 North Haven St., Baltimore, MD 21224.

Airtronics, Inc., 11 Autry, Irvine, CA 92718.

Hobby Lobby International, 5614 Franklin Cr., P.O. Box 285, Brentwood, TN 37027.

Sig Manufacturing Co., 401 S. Front St., Montezuma, IA 50171.

EZ MERMAID

(Continued from page 68)

when I taxied upwind and tried to turn downwind. The tendency is for an airplane to weather vane into the wind, making the downwind turn difficult, but again, the Mermaid handled this very well. One problem I did encounter was spray coming over the nose while taxiing quickly. Not a big problem; but make sure there's a good seal between the wing saddle and the leading edge of the wing so the spray won't find its way into the radio compartment. Making a secondary set of spray rails out of ABS sheet and gluing them forward of the the spray rails that are already molded into the hull might help to direct the spray coming off the bow. (I haven't tried this yet.)

The take-off run was straight and predictable. However, when the Mermaid lifted off a few inches, it porpoised up and down on the water. This is a common occurrence with a plane equipped with a pylon motor setup. In high throttle, the

EZ MERMAID

nose tends to dip, since the motor is high above the datum line. It's like holding an engine on the end of a broomstick while it's running at full speed. This will be very apparent on a slow fly-by when you go back to full throttle. With a pylon-equipped plane, pitch-trim will change along with throttle setting, so trim the plane for the most-often used motor setting; usually full throttle. On take-offs or returning to full throttle after a slow fly-by, remember to compensate for this characteristic with just enough up-elevator to keep the plane level.

With the Mermaid, the necessary pitch-trim changes between high and low throttle were greater than I've experienced with other pylon models. At full throttle, the nose would be drawn down; at low throttle, it would balloon—very disconcerting. At times, I felt I was flying a tail-heavy model. At first, I thought water had gotten inside the fuse, causing CG changes, but a quick check revealed no water. Back home, I checked to make sure I hadn't added any up or down thrust to the motor. The up thrust that was designed into the pylon seemed right. Day two at the lake was unsuccessful even with a little more nose weight. Now keep in mind, through all test flights, the Mermaid wasn't on the ragged edge at all; the wing never hinted at stalling and held on throughout all slow fly-bys. Nevertheless, the pitch changes, coupled with sensitive rollrate, were a bit unnerving. The rollrate was just an adjustment; the pitch changes I could never work out. Maybe the wood used in the tail feathers was too heavy. The tail moment was quite long, and the weight I added in the nose to compensate brought the total weight of the model above what it should have been. In any case, I think it's something that needs to be looked at from a design standpoint.

There are some pluses that make the Mermaid worth refining: The water handling is excellent, which is important to beginners, and the wing never tip-stalled, evidence that if the pitch problem was solved the Mermaid would have great slow-flight characteristics. This one problem is worth fixing, because the result would be one great flying boat.

**Here are the addresses of the companies mentioned in this article:*

Hobby Shack, 18480 Bandilier Circle, Fountain Valley, CA 92728.

Saito; distributed by United Model Products, 301 Holbrook Dr., Wheeling, IL 60090.

Hobby Lobby International, 5614 Franklin Pike Cr., P.O. Box 285, Brentwood, TN 37027.

ACE SEAMASTER

(Continued from page 45)

bow and hitting the prop (a common occurrence with amphibians). After a run of about 100 feet, it's airborne! A little down-trim, plus a bit of right aileron, is about all it takes to straighten things up nicely. It flies very smoothly—gracefully, in fact. I did detect a bit of power-trim sensitivity, not particularly unusual for the pylon-mounted engine arrangement, but nothing to be concerned about. Setting up for the first landing was done in a normal manner, flying the typical "box"-type landing pattern. I flared the landing,

like I would with a similar landplane, and discovered that the Seamaster skipped a few times before settling down for the taxi back. Subsequent landings, using a "fly-it-on" technique proved to be much smoother and more realistic. With the turbulated, thick airfoil, the Seamaster is a very predictable model, even when down to crawl, something for which other Ace kits have become famous. Touch-and-gos are an absolute joy to perform, and you'll probably find yourself doing more of them than with terra-based models. The high-speed taxiing of the Seamaster is really top-notch. We were able to make on-step figure eights (not recommended) while keeping the wings level and tip floats out of the water. Incidentally, Ace provides the plug-in main gear parts along with the steerable nose-gear linkages for those of you so inclined. I don't think I'll ever have a need for mine!

The Seamaster 40 was an enjoyable project from start to finish. We were all in agreement that this seaplane was one of, if not *the* best, we'd ever had the pleasure of flying. My trepidation concerning the all-up weight was unnecessary. The plane performs "as advertised" and builds very well. The strong point of the design, however, is its inherent versatility; it's truly a "land, sea or in-the-air" machine.

**Here are the addresses of the companies mentioned in this article:*

Ace R/C Inc., 116 W. 19th St., Box 511C, Higginsville, MO 64037.

Top Flite Models, 2635 S. Wabash Ave., Chicago, IL 60616.

Loctite Corp., 18731 Cranwood Park, Cleveland, OH 44128.

Enya Model Engines/Altech, P.O. Box 286, Fords, NJ 08863.

FLOATPLANE

(Continued from page 35)

advantage of combining flotation and fuselage functions in one package. This helps to increase performance through reduced drag and, generally speaking, increases the interior area for gear placement. On the down side, most amphibians are V-bottomed with props close to the water, so spray is a problem. Adequate hull strength is necessary to take the beating a pair of floats would normally absorb, and waterproofing is also very important.

With a scale project, not much can be done about V-bottom hull spray, apart from using smaller-diameter three-blade props or building a scale large enough to put the props above the spray pattern. Even a 9-foot PBY will eat spray in the calmest water conditions, so perhaps it's safe to say that scale amphibians are going to chew water in a very unscale-like manner until they're up on step. Sport amphibians are a different story, and they can be built with flat-bottomed, tunnel-hull or cathedral-hull configurations to eliminate most of the problem. As far as hull strength is concerned, 3/32-inch balsa sheeting with bulkheads spaced 3 inches apart will handle everything usually encountered—apart from that occasional bad landing.

Glassing an amphibian hull with epoxy is the best waterproofing method, polyester is a distant second, and iron-on coverings are third. If you *do* use iron-ons,

lap your seams at least ¼ inch, use Balsarite for additional adhesion, and then paint the seams with polyurethane varnish. In many cases, iron-on films that are stuck to each other with their own adhesive come apart under stress, as if the only thing holding them together were static electricity. Also, waterproof the pushrod exits, antenna exits, rudder housing and hinge areas on amphibians. If water gets in, you'll not only run the risk of dousing the radio gear, but you'll have a shifting center of gravity that will be impossible to deal with in flight.

Now, tail feathers: Nearly every plane that's modified for float-flying is going to profit from enlargement of the vertical stabilizer or fin. If you've flown your plane first as a land plane, there's almost always a need for increased yaw control when adapting to floats. Short-coupled ships, e.g., the Gee Bees; aerobatic bipes, like the Pitts; standard Cubs; or planes with high-aspect-ratio wings (trainers included) all suffer from the increased frontal area and drag that floats produce. Here again, it's possible to fly a floatplane the first time *without* this modification and to rely on the underslung weight of the floats and the inherent stability that arrangement provides. A lot of our models will do just fine, but if you find yourself playing with the rudder more than before to improve tracking, plan on adding additional vertical fin area.

A couple of years ago, Ed Westwood developed a system to determine how much the fin area could be increased. Ed cut notches in the leading edge of his test plane's vertical fin similar to the interlocking configuration in a zipper. With this arrangement, he was able to tape additions to the forward fin area on the test plane, fly it, and observe the results. He found that you could increase the fin area by as much as 50 percent before encountering adverse effects, like dutch roll or decreased rudder response. He settled on a 30-percent increase as a suggested starting point.

On a scratch-built or kit-built floatplane project, it's easy to enlarge the vertical fin. Full-scale applications will help if your plane is already completed, or if it's not always on floats. Cubs and Cessnas have a sub fin slung beneath the tail group and braced with flying wires; the Citabrias and deHavilland Beavers have permanent vertical fins mounted outboard on the horizontal stabilizer. I've even seen vertical fins mounted on the floats themselves, and this works very well. This technique provides the added benefit of removing the fin area along with the floats when you convert back to land use.

Here are some dos and don'ts for wings, along with some suggestions for improved performance. Seal the covering edges on the wings with clear polyurethane varnish. Install splash guards around the aileron pushrod exits and seal the areas around the hinges to prevent spray from working its way inside the wing. Those are the basics. Wing tips can be fabricated *without* reinforcement, because they won't take a beating cartwheeling over water. Saddle seals can be formed from silicone or from carefully installed foam tape to retard leakage when the plane is lying inverted. Since water crashes are more forgiving, rubber-band hold-downs can be eliminated in favor of nylon bolts.

If you're starting from square one with a floatplane construction project, consider adding a couple of bays to each wing panel to reduce loading. I've seen

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FLOATPLANE

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several float planes turn from marginal performers to dream ships with this modification. Many times, kits are designed around materials and lengths that are commonly available or more economical to cut, and the wing planform winds up on the shorts, quite literally. Because of their increased weight, floatplanes can be brought in a little faster to avoid a stall at flare. You can counteract this tendency by adding Hoerner tips, flaps, turbulator strips or leading-edge slats. You can even try changing airfoils to produce a floatplane that sets down like a feather and rolls out in 10 feet.

On many low-wing or shoulder-wing models, the equipment access hatch is located on the fuselage bottom. This presents a problem when you also try to install two float-gear blanks down there. An easy fix is to turn the canopy and cowl area into an access hatch and then bolt the float gear to the fuse bottom after it's been sealed shut. In most low-wing models, the front gear mounts just ahead of the wing leading edge. To avoid spreading the gear too far apart, the rear gear mounts right on the trailing edge, which then requires a very strong float center section to prevent splitting at the step.

Standard landing-gear blanks work well enough for first attempts and usually provide the narrowest allowable spread dimensions. However, if you're going to spend a lot of time flying floats, it's a good idea to fabricate something special just for float flying. If you look at full-scale applications, you'll see that most float-gear setups are splayed fore and aft with an N-strut or drop-V struts between the mains from front to rear, with spreaders between the floats.

A similar arrangement can be made from music wire, T6 aluminum, fiberglass arrowshafts, small-diameter threaded rods, dowels or even built-up blanks laminated with 6-ounce cloth, resin and carbon-fiber tape. Choose materials you're most comfortable with. Just be sure your design will hold the floats in alignment with a moderate amount of flexing.

Protecting the radio gear from an occasional bath is our next consideration. Trying to encase the servos and receiver in something to make them waterproof could drive you nuts, so the next best thing is to mount them in a central area in the fuselage so they'll only get splashed if it gets wet inside. Shrink-wrapped batteries are difficult to inspect so it's a good move to wrap them in a baggy and seal the power line with silicone. It's also good planning to mount the switch and charger jacks inside the fuselage with through-hull controls, or waterproof them with tape if they're mounted on the fuselage. I've been mounting mine where I know the spray won't hit them and where they won't be submerged if I flip over, but, practically speaking, that's not good enough, and someday I may be in for a rude awakening.

Floats and rudders are the last item on our agenda. At times there seems to be a minor controversy brewing throughout the sport as to which is better: the V-bottom or flat-bottom float. Since our models have a very high power-to-weight ratio when compared to full scale, efficiency doesn't enter into the equation. Passenger comfort, keel stiffeners to ride over half-submerged logs, and kick-up rudders aren't at issue here either, so

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FLOATPLANE

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maybe it's safe to say that a modeler can choose the system he likes best. Generally speaking, a flat-bottomed float is great for sport flying and a V-bottom is a must for scale projects or for the absolute purist.

A float can be fiberglass with ply bulkheads, built-ups, foam cores that are sheeted and glassed, or just glassed with epoxy resins. I feel strongly enough about foam-core floats to have started a business which manufactures them*, but I also have a pair of built-up floats on one of my early models, and these have served me well for over four years and, with occasional maintenance, look as if they'll last forever. One thing I wouldn't recommend is picking a float design that doesn't have sufficient bow area. That high power-to-weight ratio I mentioned earlier can easily drive a pointed bow float underwater, and I've seen many first attempts soured with repeated tip-overs just trying to taxi.

There are some basic rules for float size and rigging that I covered extensively in the September '87 issue, and I'll repeat a few of them here to get you going. Try to pick a float that's 80 percent of your fuselage length (prop washer to rudder hinge) and mount them with a spread of approximately 25 percent of your wingspan. Position the step directly under the CG or a tad behind it, make sure the prop disc clears the float deck by about two inches, and try to have at least two inches of float in front of the prop. Mount your floats with the decks parallel to the datum or horizontal stab line, and finally, install *some* kind of rudder system for steering, and improve on it if it's not adequate. There's nothing more frustrating than watching the wind blow your floatplane around.

As I approached the end of this year's treatise on float flying, I started thinking back to my first attempt. I'd be lying if I told you I wasn't a little scared. The lake looked rather ominous, deep and inaccessible, but we'd just lost our third flying site in two years, so it was either this or try indoor rubber pistachios. Everything turned out great. I can still picture that first liftoff with the water trailing off the rudders and that little .20-powered Fairchild bobbing in the water at the end of its landing. I'm not saying there haven't been crashes; I rowed out to one that looked as though someone had poured popcorn on the water, but I've always gone back to shore with my engine and radio gear intact and my spirits undaunted.

People talk about float flying's added dimension and I can assure you it's there.

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FLOATPLANE

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The spectacle of a float parting the water and leaving a wake that turns from placid to furious has no equal in modeling. To begin to read the wind as you never have before, to watch your plane lean in a downwind taxi turn, surge through a wave or just sit on a pool of water as smooth and reflective as glass is nothing less than poetry come to life. Give float flying a try this year. For me, this is the stuff that dreams are made of, and maybe it'll suit you, too.

**Here are the addresses that are pertinent to this article:*

Ace R/C, Inc., 116 W. 19th St., Box 511C, Higginsville, MO 64037.

Saito; distributed by United Model Products, 301 Holbrook Dr., Wheeling, IL 60090.

Model Airplane News, 251 Danbury Rd., Wilton, CT 06897.

John Sullivan/Model Floatplane Products, 1421 Second St., Calistoga, CA 94515.

SMALL STEPS

(Continued from page 40)

and immaculately finished.

Ralph is always experimenting, as the models pictured here demonstrate. Even those that look fairly conventional have unusual engines, fuel-tank arrangements, or other Pearson innovations. Unfortunately, it rained the day I stopped to visit, and I had to be content with static photos taken in Ralph's front yard rather than with the exciting flight pictures I had hoped to present. Maybe next time!

"Zipking": .049-powered, 26-inch span, 225 square inches, 18 ounces. It's covered with Micafilm, and can take off from grass fields.

Ralph has a couple of small twin-engine R/C models, and both are excellent fliers. Ralph's fliers reminded me of an inquiry I had received about fuel-tank installations for multi-motor airplane models. A reader wanted to convert a Guillow's B-17 kit into a 4-engine R/C project, with four Cox .020s and a single fuel tank in the fuselage.

The theory behind supplying all four motors from one central tank is that the engines will run out of fuel at the same time, thus avoiding "engine out" flying problems. Although this scheme sounds logical, it won't work. When this type of setup is tilted sideways, the engines on the higher side of the wing will starve from lack of fuel, while those on the low side (now gravity-fed) will get too much fuel and die.

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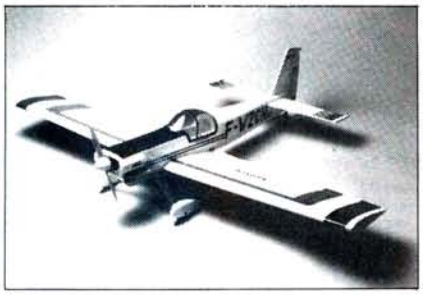
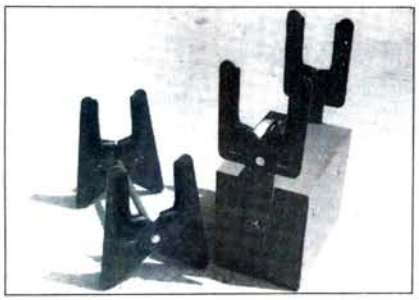
Product News



GREAT PLANES/KYOSHO CAP 21

Kyosho is pleased to announce the new 40-size Cap 21. This smooth-flying pattern ship is almost ready to fly, and perfect for the experienced flier who doesn't have time to build. All hardware is included, so you'll be ready to fly in no time at all. The Kyosho Cap 21 has balsa wings that are pre-covered, and the fuse is made from super-light, super-strong LSS molding. It even includes all the necessary decals, so you don't have to spend time painting. The Cap 21 has a wingspan of 59 inches and weighs 92 ounces. It requires either a .40 to .45 2-cycle or a .60 4-cycle.

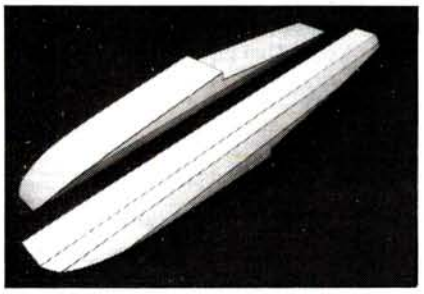
For more information, contact Great Planes Model Distributors, P.O. Box 4021, Champaign, IL 61820.



BIG SKY R/C AIRCRAFT STANDS

These two completely portable stands from Big Sky R/C come in both kit form (complete with all necessary hardware and instructions) and assembled and ready-to-paint. The Field Box model is designed for installation on any popular box on the market. The second model is free-standing for workbench or floor. Both are adjustable from 3.5 to 6.5 inches, and are ideal for home or field repairs and for transportation.

For more information, contact Big Sky R/C, 1005 19th St. Court, Havre, MT 59501.



JOHN SULLIVAN FLOAT CORES

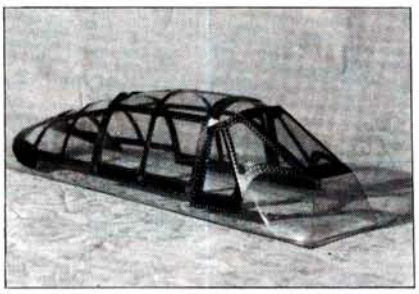
John Sullivan Model Floatplane Products has recently introduced a line of hot-wired, virgin, bead-foam float cores in six sizes, ranging from 28 to 48 inches in 4-inch increments. The floats are patterned after the EDO 1650A-series floats that feature a generous bow for spray deflection, accurate volumetric distribution for correct flotation attitude and sufficient cutaway for takeoffs and landings.

For more information, contact John Sullivan Model Floatplane Products, 1421 Second St., Calistoga, CA 94515.

A.J. PRODUCTS BLACKBIRD CLEANER

The Blackbird Cleaner is A.J. Products newest offering. It's an after-flight cleaner for the removal of exhaust residue, dirt and scum. This special formula foams on contact and doesn't drip or run into unwanted areas. Because there's no soap in Blackbird Cleaner, it won't cause fogging.

For more information, contact A.J. Products, 8470 Heritage Dr., Clarkston, MI 48016.



IMPACT ENGINEERING CANOPY FRAMEWORK

Impact Engineering now offers a stainless-steel canopy framework that's realistic, easy to install and light. This framework is available for several kits, including Byron's Corsair, Hellcat and P-51, Top Flite's Corsair, P-47, and Zero kits. A custom kit is also available for scale enthusiasts who wish to make a canopy for an aircraft other than those listed above.

For more information, contact Impact Engineering, 2100 Stonehill Court, Arlington, TX 76012.

MAB AVIATION GUIDE

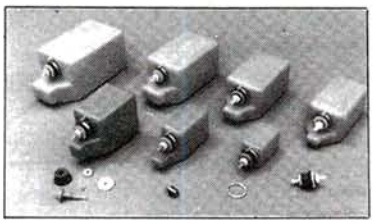
For modelers or enthusiasts who would like to know where they can find the closest air museums and memorials, MAB has introduced the "US Guide to Aircraft Museums and Memorials, World War II Landmarks, and Converted Aircraft." This book contains information on 300 aircraft museums and 220 city parks with aircraft on display. Also included are a number of strategic locations used during World War II and restaurants that have airplanes in or around them.

For more information, contact MAB, P.O. Box 13648, Ft. Wayne, IN 46865.

CUSTOM R/C F-8 CRUSADER

Another precision scale kit designed by George Miller with a power-to-weight ratio of over 1-to-1. The engine is straight up and the wing is removable. The Custom R/C F-8 Crusader is fully aerobatic, stable and forgiving. It's designed to use the Byron Fan and No. 202M Spring Air retracts. The kit features a fiberglass fuselage, foam wing cores, clear canopy and all pre-cut wood. The F-8 has a wingspan of 50 inches, a 72-inch fuselage and weighs approximately 11 pounds with a .77 to .90 engine.

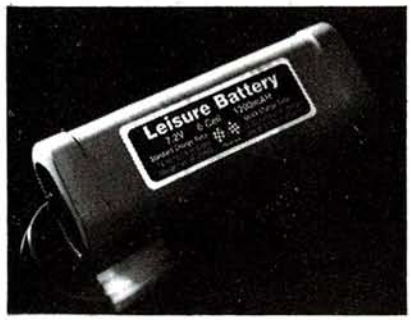
For more information, contact Custom R/C Models, 1140 Civic Center Dr., Rohert Park, CA 94928.



KRESS SIMPLSTOPPER FUEL TANKS

Kress Jets Simplstopper Fuel Tanks are available in 1¾, 4, 8, 12, 16 and 24-ounce sizes, and there's also a tapered Falcon Trainer Tank, specially suited to trainer-type model noses. The stoppers work with both nitro fuel and gasoline. The main feature of these tanks is their extremely simple hook-up. Only one line goes through the threaded nylon stopper insert. Molded vent and fill ports are located at the top and bottom of the tank. Other tanks have molded vent and fill ports, but only Kress puts them where they belong.

For more information, contact Kress Jets, 4308 Ulster Landing Rd. Saugerties, NY 12477.



LEISURE MATCHED 1200 PACKS

The new Leisure 7.2V, 6-cell, 1200mAh battery packs are now made from matched Sanyo Ni-Cd cells that deliver maximum power and offer longer running times for electric-powered cars, boats and airplanes. The 1200mAh battery pack is available wired and unwired in all the most popular connector designs. A new Leisure-Yellow shrink-wrap package and label with complete charging instructions round out the features of the new battery pack.

For more information, contact Leisure Electronics, Inc., 22971 B Trinton Way, Laguna Hills, CA 92653.

POWERMASTER PLUS FUEL

Powermaster has introduced a new, super-premium-grade fuel to accompany its popular Model Engine Fuel. Powermaster Plus contains the usual top-quality ingredients found in their regular products, as well as extra ingredients to ensure maximum performance from any model engine. All Powermaster fuels are available in nitro blends from FAI to 70 percent, including special blends for pattern, FAI, boat racing and large Super Tigres.

For more information, contact Powermaster Products, Inc., 10103 Freeman Ave., Sante Fe Springs, CA 90670.

FOX 50 RC

How often have you wished for more power in your 40-size model, but you couldn't imagine putting a big heavy 60 up front? At 11½ ounces (bare), the Fox 50 fills this need. At the factory, each Fox engine is test-run and checked for idle, full power, throttle response and compression, and *only* the engines that meet Fox's performance standards are sold.

For more information, contact Fox Manufacturing Co., 5305 Towson Ave., Fort Smith, AR 72901.

NOVAK NARROW BAND RECEIVER

Novak Electronics' 1991 AM Dual Conversion Narrow Band Receiver has proven its outstanding performance at the flying field for over four years. It's compatible with all AM transmitters and meets all 1991 FCC specifications. Each receiver is custom ordered, and is available in either 6-meter (with choice of frequency) or 72MHz (with choice of channel).

For more information, contact Novak Electronics, 128-C East Dyer Road, Santa Ana, CA 92707.

Descriptions of new products appearing in these pages were derived from press releases by the manufacturers and/or their advertising agencies. The information given here does not constitute endorsement by **Model Airplane News,** or guarantee product performance. When writing to the manufacturer about any product described here, be sure to mention that you read about it in **Model Airplane News.**

SMALL STEPS

(Continued from page 98)

The *only* workable fuel-tank arrangement for multi-engine R/C models is the kind Ralph Pearson uses: a separate tank for each motor. If you don't have throttle control (which can be difficult to set up on really tiny engines such as the Cox .020), you can still safely fly R/C multi-motors if your model has plenty of vertical tail area and an effective rudder. For example, a deHaviland Mosquito wouldn't be as good a choice as a Douglas A-20A, a Bristol Beaufighter, or a late-model Boeing Flying Fortress.

Now, back to the subject of keeping small R/C models lightweight: The lightest covering materials are the old-fashioned ones that are finished with airplane dope: tissue, silk, and Silkspan. The introduction of iron-on covering has made these materials less popular, but I've never stopped using doped finishes because, in addition to lightness, they have several other advantages.

Over the last few years, I've found that the available brands of model dope become exceedingly brittle when dry. The mere touch of a fingernail when handling a Silkspan-and-dope-finished model is sometimes enough to puncture its covering. Of course, it's possible to add extra "plasticizer," such as a few drops of castor oil or tri-cresyl phosphate (TCP), to the dope before applying it. Determining the proper amount is difficult, and too much is almost as bad as too little.

I have some good news for lovers of the old covering techniques. Good-quality airplane dope is again available! A new company called ABC Hobby Supplies* is now making Randolph aircraft dopes available by mail order. This is the best dope I've ever seen. It's made for full-scale fabric-covered aircraft, and it meets all federal standards for aviation use.

I recently visited with Jim Correll, the genial proprietor of ABC, and cross-examined him unmercifully about his use of Randolph dopes on model aircraft. Jim has about 20 airplanes in his garage. Every one is finished with Randolph dope and they're all beauties! Some are fifteen years old, and all of them are flown regularly. Their finish stands up so well that the only way to pick out the older models is to examine the tires for wear.

Jim's models demonstrate the durability of Randolph dope. Some time ago, one of them collided with a heavy flight box that was carelessly left next to the runway. The leading edge of one wing was flattened for several inches, but I had to

(Continued on page 104)

SMALL STEPS

(Continued from page 102)

look hard to detect the damage. There wasn't any visible harm to the finish. (A couple of years ago, one of my own models ran into an obstruction and the brand name dope on its wing cracked and crazed halfway across the chord.)

Because ABC Hobby Supplies is a new company, not all of Randolph's full range of 45 colors is in stock. However, the 19 most popular colors are now available, and more will be added as demand warrants. Besides colored dope (all of it non-tautening butyrate), ABC also carries clear nitrate and butyrate dope, plus thinner and retarder.

Some explanation is needed regarding the thinner and the retarder. First, although the Randolph company advises using nitrate thinner for nitrate dope, and butyrate thinner for butyrate dope, butyrate thinner works fine for both. (I confirmed this with a telephone call to the Randolph factory.) Second, the "retarder" is really a slow-evaporating thinner. To avoid the whitish discoloration known as "blushing" that occurs during humid weather, use the retarder rather than the regular thinner.

Jim Correll uses about half thinner and half retarder when mixing dope. I think 100-percent retarder works fine for thinning my dope, because I see no advantage in fast drying. By the way, although both Jim and I own good spray-painting equipment, we almost always finish our models with a brush.

The Randolph colored dopes are supplied in a concentrated form and *must* be thinned out considerably for use on models; about 50 percent for a brushed finish; 70 percent or more for spraying. This is because the dope is prepared for the full-scale aviation industry that routinely uses sprayed finishes. As the business grows, ABC may re-package pigmented Randolph dope in ready-to-brush form. But for now, it's only available in the factory-mixed formulation.

**Here is the name of the company mentioned in this article:*

ABC Hobbies Supplies, P.O. Box 2391, Clarksville, IN 47131. ■

GEE BEE FLOATS

(Continued from page 38)

perimeter of what we can now call the spray rails. Now, with the rails slightly sanded, waterproof them with paint, or if you're really in a hurry, just coat them with CA. Next, apply contact cement (it's the only thing I've found that works on this type of plastic) to the area you've marked on the float and to the spray rail. Before you do this, make sure the largest surface on the triangular stock (the hypotenuse) is the surface that will be facing inward toward the center of the float. When you've ascertained which side of the tri-stock is to be coated with contact cement, coat that and the designated area on the floats, but let all areas become tacky before mating them.

This re-forming of the Gee Bee floats not only helps takeoff, but also improves landing. Newcomers to float flying often make the mistake of establishing a rate of descent more suited to landing on the ground, and this is not a sufficiently gradual rate. As a result, the plane will bounce back into the air. This isn't all that serious, but with the *unmodified* Gee Bee float, the deep-vee often cuts its way down into the water, the entire float

(Continued on page 107)

GEE BEE FLOATS

(Continued from page 104)

submerges, the float nose catches, and the model flips over. The modified Gee Bee performs admirably under hard-landing conditions.

The name of the game—especially when flying off water—is *fun*, and to *increase* the chances of fun we must *decrease* the chances of discouragement—especially for beginners. This inexpensive modification goes a long way toward meeting this goal. The only problem I've run into is that, after two seasons of flying and one cold winter in my cellar, some of the contact cement has become brittle; no biggy, considering the minutes it takes to put a fresh coat on, but maybe one of *you* can direct me and others to a brand that resists this. Thanks.

Time for me to float away...

**Here is the address of the manufacturer featured in this article:*

Gee Bee, 143 E. Main St., Chicopee, MA 01020. ■

FLOATING AROUND

(Continued from page 62)

relationships, everything was done by the book. That sounds a little facetious, I know, but the point is that you *can* change things as long as you have a fairly good rationale underlying the change.

Next, it was time to make the actual float. I've included a drawing of the float we cut, and I've listed the dimensions as percentages of the length. (This is determined by multiplying the fuselage length by 103 percent.) After some discussion, we decided to cut a flat-bottomed float with a relieved area to form a tunnel-hull configuration. We did this to find out if a V-bottom was absolutely necessary on a pylon float (it isn't), and also to determine whether the tunnel-hull strakes would benefit from tracking or not. (They do.)

At this point, we made one mistake. I suggested that the tunnel hull be formed by cutting a cavity *out* of the float bottom. Because of our dulled senses (it was 1:30 a.m., I think) Mike misunderstood and *added* tapered strips to the float bottom. This increased angle of attack, although slight, causes the Dalobipe to ride slightly on its nose at high speed. Just a breath of up-elevator lets the Bipe ride level, but we should have relieved the bottom as follows: Measure the height of the step (let's say it's 1 inch) and draw two lines on the float bottom that same distance (1 inch) in from, and parallel to, the sides. Extend those lines all the way from where

(Continued on page 110)

Helicopter Challe

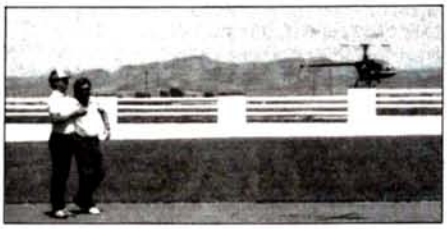
by CRAIG HATH

REGARDLESS OF HOW LONG you've been active in any sport or hobby, take the opportunity to focus in on some of the things that have become automatic. For example, I was testing a new helicopter and I wanted to experiment with a different set of rotor blades. Once I had set the pitch curve to the range that worked best for the machine, I was hesitant to make any changes that would affect that curve. Normally, one set of blades is different from another, and some adjustment is required. I tend to use the manufacturers' recommended pitch curve as a starting reference, and then tune in the machine by actual flight. Most of the changes to the pitch curve will be based on the reactions of the helicopter and on listening to the sound of the engine, while paying attention to rotor speed. Using this method, it's very easy to wind up with no idea of the actual pitch curve, in degrees, that you're using for that particular helicopter.

I decided to put some of my written advice to the test. I was happy with the results of my trimming efforts, and I wanted to log them for future reference. Logging the pitch curve meant that I'd have to actually measure it with a pitch gauge! There were three different pitch curves to measure. One was the normal flight mode for hovering and slow forward, the next was the high-idle mode for aerobatics and inverted flight (I don't use the inverted-flight system on the radio, I just fly the helicopter upside down like an airplane), and the last one was the throttle-hold mode for autorotations. Since this helicopter was being flown with a JR* Galaxy radio system, I had the luxury of getting servo position references in terms of numbers displayed on the transmitter's liquid crystal display. By noting these figures and comparing them to the actual pitch of the rotor disc at each point, as the transmitter throttle stick is moved along its travel, the pitch curve can be re-created at any time.

Having measured the pitch curve, I grabbed the new set of rotor blades and boldly went to the flying field for some testing. As I began to lift the helicopter into a hover, it became obvious that the hover pitch was going to be radically different for this set of blades. The pitch trim wouldn't get the rotor speed back to normal, even with it moved into the full-high position. Changing the hover point of the pitch throw means that the end points will also change. The next step was to shut the helicopter down, and get out the pitch gauge and my log. By matching all three of the pitch curves to the new set of rotor blades (this whole process only took about 15 minutes), I was confident that there would be no problem flying the helicopter.

Here's World Champion Curtis Youngblood, captured while having a talk with his Agusta/Jet Ranger. Will he be able to repeat as National Champion? Tune in next month to find out!



Don Weitz and Ken Wilson put the first flight on Don's new Baron 60 EX—which turned out to be a very nice helicopter from a guy who usually flies pattern planes.

Time to re-test the new blades, and now the performance was very close to the original set of blades. Only a slight tracking adjustment and just a tad more hover pitch had the helicopter ready to conquer the skies. By knowing the normal parameters of your setup, you can easily re-create the same flight performance without a lot of trial-and-error. This is especially helpful in the event of re-trimming after a crash, or just for the sake of experimentation.

This month's column will cover matching the throttle curve to the pitch curve. The effects of this process can really fine tune the flight characteristics of the model. It's often difficult to determine when to correct a problem caused by throttle instead of pitch. With practice, you should get an "ear" for the differences. One sure effect of a faulty throttle curve is poor response to throttle when making the transition from hover into forward flight. Essentially, the engine is trying to keep up with the load on the rotor disc, which is being applied with the addition of pitch. If the helicopter is hovering with the engine operating behind the power curve, the helicopter will lug its way into forward flight. Don't confuse the throttle with an

over-pitched setup. If the rotor disc is over-pitched, it will load the engine down even at full throttle. If the throttle is behind the power curve, the engine will catch up to the rotor disc at full throttle, and the rotorspeed will return to normal. Listen carefully to the helicopter as you guide it through all flight attitudes, and note changes in engine sounds.

In the August '88 issue of *MAN*, I included a chart that helps to determine trouble with throttle and pitch relationships. Having that chart at the field will help to pinpoint the cause of any problem.

This is Dan Melnik's XCELL 50 just recovering from a wild tumble. Notice the path and direction of the smoke—it's basically what the maneuver looked like.

Remember, you're trying to achieve a constant rotorspeed in order to have the most control possible over your machine. If you allow the engine to operate at throttle openings below a point where it can't overcome the load, you'll never achieve the goal of constant rotorspeed. The effects of leading the engine into the collective system allow the helicopter to have the feel of extra power and performance. You'll notice the difference in the way the helicopter responds to throttle input.

One sure sign of the engine lagging behind the power curve is when the helicopter is re-entering hover from forward flight. You're lagging behind the power curve if the helicopter is coming in a little too quickly, and the throttle has to be jabbed to prevent impact with the ground. On the other hand, if you can maneuver the helicopter in almost any situation without panic, you're probably working on the upper side of the power curve.

Since helicopters hover with the throttle in the half-stick position, it requires more than half the throttle barrel open on the carburetor at this point. A good starting position would be about five-eighths open, or slightly more. Now, this immediately presents a small problem with the setup of servo throw. Altering the middle position to more than half of the throttle-barrel opening may mean that you can no longer get the engine to idle low enough without binding the top end of the throw, or pushing the throttle open beyond the normal limits. In this case, use differential to favorably offset the servo throw. Differential throw is a way to alter the center point in the conversion of rotary motion to linear motion without greatly affecting the high and low end points. (See the September '88 issue of *MAN* for details.)

Simply altering the throttle curve so that the carburetor is open slightly further in the center position may not overcome all the problems. For example, as the

Three people important to model helicoptering, from left to right: Mr. Negami, President of Kalt Sangyo of Japan, and Mike and John Elmer, co-owners of Sprengbrook Precision Ltd. of Great Britain.

helicopter re-enters hover, there may be some overspeeding of the rotor disc. It might respond to the throttle quite well now, but the extra rotorspeed makes the collective and cyclic controls very sensitive. Even with the most basic radio systems, the idle trim should be adjustable to allow for some of the rotor overspeed. Be careful not to get the trim so low that the engine dies at the idle position. With most of the JR radio systems, the throttle

Here's a beautiful GMP Cobra at the AMA Nationals last year. The owner is unknown, but the photo is a good example of attention to detail.

trim is only effective up to about 30 percent of the throw, and will not alter the hover point or the top end. This works out perfectly for my purpose, and this feature will also serve as a simple high-idle to help ease the process of dialing-in the machine.

With some of the more complex radio systems, throttle can be added or reduced at several points along the curve, so creating the flexibility to fine tune the machine to true, constant rotorspeed. Otherwise, you may need to make some compromises. Try to get the helicopter to respond to the throttle well enough to easily recover from almost any situation, and live with some rotor overspeeding, if necessary. Try to work with the differential curve of the throttle servo until a satisfactory point has been reached. Keep in mind that the collective pitch may be altered somewhat; however, there is little margin to play with here.

Take your time, and follow the steps that I've presented over the last three months. You'll find that you're flying an entirely new helicopter. By using differential throw to get the needed results, you'll have the ability to set up your machine to do more maneuvers with less effort in the process. As this is being written, I have one of my machines set up so well that it will do just about anything. I haven't gotten into trouble flying this helicopter! It just flops around the sky any old way I pull, jerk or drag it, and then it just recovers and flies out of the situation.

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duke's mixture

Yesterday, I was 69 years old! Forgive me if I reminisce a bit. Sixty-five years ago I saw my first airplane fly — and from that day I knew I wanted to design and build flying machines. Sixty-two years ago I built my first successful flying model — a Baby R.O.G., (rubber powered, of course) from a kit my father found somewhere. It flew about 75 feet, as I remember, in a perfectly straight flight path. August, 1928 — I discovered "Model Airplane News". How wonderful! I could send away and buy glue, dope, thinner, balsa wood, and other wonderful goodies. This started a ten year building spree, during which I probably built close to 100 models a year mostly rubber powered and nearly all original. College, then work, then the Army slowed building, but didn't stop it.

In 1943, 45 years ago, I built my first motor.

In 1948, I left the Douglas Research Department to devote my full time to building model airplane motors. The model airplane motor business has been good to me and supported me well, even though I was guided more by what interested me than what was good business.

In these past 40 years I have built a facility capable of efficiently producing ten times our present 1.5 million volume. The market is the best it has been in 20 years. I have four new products in various stages of preparation. We should be going like Gangbusters, but I just don't have the steam to push like I used to. What this business needs now is a young, highly motivated, model oriented man with a college degree in Business Administration. Since there is no motivation like owning part, or all, of the business, it would be nice if he had rich parents or relatives who would stake him to some degree of ownership. If you know such a person, send him my way.

It is inevitable that someday this business will have a new owner. But, rest assured that I am going to continue to contribute my talents to it as long as I can — and my ancestors were long lived — the most notable was my Great Aunt Libby, who worked to the ripe old age of 113 (No, that's not a misprint).

Happy flying,

Duke Fox

Manufacturing Company
5305 Towson Avenue
Fort Smith, AR 72901
Phone (501) 646-1656

FLOATING AROUND

(Continued from page 107)

the float's bow radius begins, along the flat run, and up to the point where the step meets the rear cutaway bottom. Next, draw a line one-third of the step height between the vertical lines on the face of the step. That establishes the cutout area at the step. After that, it's easy to take a sanding block and grind out a tapered channel to the point where the bow radius begins on the float bottom.

At this point, we cut a center pylon, giving us 1 inch of prop clearance with the float deck running parallel to the plane's datum line. The float and pylon were then glassed directly onto the fuselage to form a complete integral unit. We then floated the Dalobipe in my neighbor's hot tub. We marked the water line on the side of the pylon float and then went back to the shop and hung the tip floats so that each tip-float step was 1 inch in the water at rest. We figured that the tip floats should be allowed to break away at some point, so we laid up two pads made of three layers of 6-ounce cloth, which conformed to the underside of the wings at the attach-point. When cured, these pads were trimmed to form a 1-inch flange around the top of the tip-float pylons and glued to them. Using 4½x6-inch sheet-metal screws, we then attached the tip-float assemblies to the blocks we had previously installed in the wing. This system worked very well and eliminated a lot of wires and rigging.

The night before the first test flight, Mike installed airfoil-shaped aluminum V-struts that land on ⅛-inch plywood pads, and we "rattle-canned" the floats and bottom wing with Krylon. This project seems to have been blessed with good luck from the beginning. For example, we always planned to haul the Dalobipe around in one piece, but never bothered to measure Mike's pickup truck to see if the thing would fit. As it happened, the bottom wing clears the top of the pickup bed wall by ½ inch, and the tip floats each clear the outside of the truck's side panels by ½ inch! I think it was destined to be this way. With this plane, one of the biggest kicks isn't flying it, but just driving through town with that giant plane riding in the back. It really turns heads!

Now on to flying. There's an old saying in modeling that you should only change one thing at a time. Since we'd only turned the Dalotel into a pylon float biplane, I felt we were assured of success. However, this was Mike's plane, and he was flying it, so he was a little more on edge. As it turned out, Mike was com-

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FLOATING AROUND

(Continued from page 110)

pletely at ease after a couple of seconds in any given mode. He first tried taxiing and found the Dalobipe to be absolutely rock-solid. The broad bow, flat bottom and tunnel hull keeps all spray away from the prop, even in rough conditions. The pylon float maintains a perfect heading and it's even possible to rock the plane from side to side, without veering, all the way up to two-thirds throttle.

In the air, the Dalobipe is remarkable. The extra wing has reduced loading from 35 to 26 ounces per square foot, and it shows. Our only concern was that the plane would come apart in a violent snap, but, short of that, the Dalobipe looks as if it can do *anything*. So far, Mike has successfully tried sustained inverted flight, inverted and upright spins, vertical rolls, tight loops, screaming dives, split Ss and some really hairy free-style effects. One amazing characteristic is the Dalobipe's ability to turn perfectly flat 30-foot circles with rudder and elevator only. It's freaky to watch, because the plane looks as though it's skidding around on a huge sheet of glass in the sky.

The only problem Mike has had with the Dalobipe's performance is setting up for a landing. Mike cartwheeled in on four of the first day's six landings. I took videos of the whole episode, and while watching the footage, we realized that the Dalotel's tendency to tip-stall had come back to haunt us, albeit at a much slower speed. In successive outings, we've found that we have to keep the power up and fly the Dalobipe at about 30mph without flaring. Mike's tendency to come in too slowly probably came from seeing many other pylon setups that caught their tip floats and water-looped. Now that he's realized he can depend on the tip floats to work, landings are a piece of cake.

Pylon float flying is relatively new to the sport. Given the small numbers of modelers out there who will try it, most manufacturers will never produce commercial units, and pylon float activity will always remain the domain of the scratch-builder, so I'd like to hear from those of you who've tried it and succeeded. I'll do my best to pass on pertinent information in future columns.

I'll be back next month with a report on Paul Weston's new Sea Era and Jerry Sleight's new scratch-built floater. Both seaplanes are among the finest I've ever seen. Bill Price has had his share of problems with his .40-powered PBY. Now he's added 2 inches to the forward hull (for increased flotation), enlarged the wing (to lower loading), and added rudder area (to prevent yaw), but I've yet to see it fly.

CGM FLOATS

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especially when working tight corners or tricky areas, like the forward tips where everything is round and converges. I've seen others covered with the iron-on

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CGM FLOATS

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"texes," and one pair even glass-clothed, resined and painted. That's a lot of work and I don't think they look any better or are more waterproof than mine. The only advantage that they may have is a slight edge in durability, and that's open to discussion.

The next step in the process is the installation of all the water-rudder linkage, which is provided. Twin brass rudders are used, which give great steering capability, especially important for those water fun-flys where one of the events is taxiing around pylons. These enable you to turn on a dime.

The kit also includes a sub-rudder which is suggested, but not mandatory, when you use these floats on the CGM Cub. Its substantial area reduces the skidding effect in flight caused by the drag of the floats, which also blank out some of the vertical fin's effectiveness. Unfortunately, it's not a very pretty appendage, so I chose the form-over-function philosophy and left it off. It's designed to be removed easily (from the Cub), so I'll probably screw it in place just to satisfy myself that there's a difference in flight characteristics. There definitely was a difference in the float-equipped EZ* Decathlon that I talk about elsewhere in this issue.

Installation on the Cub was quite easy and is very clearly described and illustrated in the construction manual. All the water-rudder to air-rudder linkages are included and are external for easy access. The purist may want to make this linkage more scale-like with cables, pulleys and such, but the method shown is simple, straightforward and positive.

Although these floats were designed for the J-3, they are adaptable to nearly any airplane of a similar size and weight. To help you along in adapting them to your airplane, the construction manual details the installation on a Goldberg Eagle and Sky Tiger, reflecting the application to both high-and low-wing sport planes.

I think Goldberg has done a great job with this kit and I hope they sell as many sets of floats as they did Cubs. I believe that once you try float flying you'll be hooked...and gee, think of all the *new* flying sites.

**Here are the addresses of the companies mentioned in this article:*

Carl Goldberg Models Inc., 4734 West Chicago Ave., Chicago, IL 60651.

EZ line; distributed by Hobby Shack, 18480 Bandilier Circle, Fountain Valley, CA 92728.

GOLDEN AGE

(Continued from page 81)

wheel from which a lever operated the wheel-strut pivot. With the wheel in the desired position, to lock the gears, the lever's pivot on the cam wheel would be "over center," so the lever couldn't move from a reverse force. The gear was locked and the motor gears were protected.

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Classified

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Club of the Month

RIBCRACKER R/C CLUB

The Ribcracker R/C Club of Livonia, MI, is the *Model Airplane News* "Club of the Month" for October 1988.

A standing ovation is in order for the Ribcrackers, whose activity roster is indicative of a top-notch club that extends a helpful hand to ambitious would-be modelers in an effort to keep their hobby growing strong.

In addition to the club's regular flying and social activities, there are a number of entry- or novice-level segments scheduled into the events that allow would-be modeling enthusiasts to participate. The annual Fun Fly has a Novice Pattern event in which novice fliers, who are interested in competition, are required to do some very basic pattern maneuvers, with what seems to be the club's trainer of choice, the Goldberg Eagle.

The Ribcrackers have also organized a Radio-Control Airshow to put radio-control in the public's eye—and transmitters in their hands. The show includes demonstrations of ¼ scale, military, ducted-fan jets, electrics and four-cycles, aerobatics and helicopters. Also included are radio-control car demonstrations twice a day and a raffle for an airplane complete with radio and engine (you guessed it—a Goldberg Eagle). One segment of the two-day show that caught our eye was "buddy-box" flying. It seems that the club rigged up a couple of trainers (probably Goldberg Eagles) with buddy-box transmitters to allow spectators to try their hand at flying a radio-control airplane with the assistance of an experienced pilot.

We would like to thank Chris Kiczek Jr. for sending us his copy of the Ribcracker's newsletter, "Thunderbolt." Had it not been for Chris, we may never have known about this wonderful club. Maybe he should get one of the free subscriptions!

We at *Model Airplane News* are pleased to award the Ribcrackers two free, one-year subscriptions which they may give to a couple of the club's outstanding members. Keep up the great work!

Each month **Model Airplane News** will select the club newsletter that best shows the club's activities and energies directed toward the furtherance of the hobby. The award is not based on size or quality of the newsletter, and can be about any aspect of the hobby (F/F, C/L, R/C, boating, cars, etc.). **Model Airplane News** will award two free one-year subscriptions to be given by the club to outstanding junior members. So send your newsletter to **Model Airplane News,** Club of the Month Contest, 251 Danbury Rd., Wilton, CT 06897.

GOLDEN AGE

(Continued from page 115)

Power for the retract gears could be a couple of pen-cells or the receiver battery. Compared with a fixed gear, retractables added about 7 ounces.

Using the retract gears with the rudimentary proportional radios added a new twist to the early flights. Each time the gears cycled, the airplane gyrated noticeably; as yet, the radios didn't have noise isolation. Jack Roth came up with a brilliant solution: He devised a rotary switch that was activated when gear action was desired. In sequence, this switch would first turn the radio *off*, then start the gears, *wait* five seconds and then turn the radio back on! I recall many anxious five-second periods of waiting to see if the radio would actually come back on, while the model went merrily on its way! Strangely, I can't remember a time when the radio failed to turn back on, but some of those five-second free-flights covered amazing distances!

Later, research and radio improvements neatly eliminated the noise glitch, and we were able to get some fine flying out of the modified Viscounts. At a Chicago Nats it was said that one retract-gear Viscount was the first R/C plane to complete all flights flawlessly.

Success with retract gears eventually led to the completion of the ultimate (is there ever such a thing?) plane-design project, resulting in the Interceptor. We saw the full advantage of the drag reduction, and a performance compatible with proportional radio's potential.

Over 25,000 retract gears were distributed, and we were proud of what they represented; they pointed the way to what could be done, and it wasn't long before others also offered retracting gears. I don't know who offered the first mechanical, servo-operated units that are so popular today. Southern R/C had a set that Dave Brown still produces. Bob Violett conjured up a fine mechanism using cam action, and this may also still be available. However, the second major step forward was Carl Goldberg's nylon injection-molded system that offered a complete trike set for only $19.95. Many modelers couldn't resist giving retracts a try at that price! The most widely used are probably the Rhom pneumatic units. (Of course, others use the same method.) The advantages here have been the ample power, lightness and isolation of the gear system from the radio.

Today, we see retract gears as a must for pattern flying because they add the desired realism to our scale birds. Even the more adventurous sport fliers enjoy being wheel-less, and none of us can sell the performance gain short!

Tom Dixon (Suite 401, 1938 Peachtree Rd., Atlanta, GA 30309) was one of several people who identified our mysterious UFO. He should know, because, as a youngster, he watched Lewis Chambers build it! Along with others, Lewis introduced Tom to modeling. Now, as president of PAMPA, Tom is deeply involved in C/L, but also flies R/C. As a service to others, he offers an extensive list of C/L plans. In the list, I was pleased to note several R/C designs, including the sought-after Smog Hog and the Orion. Contact him, if you're interested.

Tom says he'd be pleased to add more OT R/C plans if any of us can help him.

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GOLDEN AGE

(Continued from page 126)

He needs a legible set of the original plans. From this, he makes a "master" and he *guarantees* to return the original unharmed. This is a good way to establish a source of OT R/C plans—let Tom do the work!

Tom also sent some information to *warn* all modelers. As modelers, we tend to become collectors, saving anything that might have some future use. Such precious stuff is often shoved into a far corner and forgotten until a need arises. This is often so with finishing materials like dope, epoxy, thinner and paint of all sorts. Of course, this may be just a small portion of our "savings," but these things represent a *potential danger* when we seal our homes against inclement weather, without adequate ventilation. Modern homes often have central heating-cooling systems that circulate the air throughout the building.

Tom says that an OT modeler friend and his wife woke up feeling terrible: dizzy, nauseated, chest pains—actually in real trouble. The rescue squad determined the cause to be fumes from a ruptured can of model "goodies" in the basement. The hospital reported that they were lucky to have woken up; if they hadn't, they would soon have had nothing to worry about! My point is: *Take care*, and be aware of what you're doing! I don't want to lose any readers! ■

HELI CHALLENGE

(Continued from page 109)

Because there is always sufficient power to overcome the load on the rotor disc, and the speed is always the same, the machine doesn't care what attitude it's in. I've seen model helicopters fall out of the sky at the top of a loop when the rotor disc got bogged down and stalled. The engine couldn't keep up with the load, and the drag on the rotor blades reduced the speed of the rotor disc enough to kill lift completely. A few times, the pilot would recover by pulling the throttle back to idle and pointing the nose of the helicopter at the ground, gradually adding throttle and pulling out just before impact. Other times, the results were an attempt at putting the helicopter back into kit form, usually successful!

In the next issue I'll discuss cyclic pitch control, and how to fine trim this area. Then I'll summarize the trimming process in general. That will conclude my series about trimming for ideal performance, and allow me to address some of the other areas of our challenging sport! Until then, keep taking notes about your setup for future reference.

Here is the address of the company mentioned in this article:

JR Radio; distributed by Circus Hobbies, 3132 S. Highland Dr., Las Vegas, NV 89109. ■

ADVERTISER INDEX